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Merchant Pig Iron Operations Analyzed

How Charting of Production, Stocks and Shipments
May Be Helpful in Adopting Selling
and Manufacturing Policies

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PLANS for the shutting down of merchant pig iron furnaces have suggested an analysis of the operations in this industry during the past eighteen months. Statistics covering plants producing approximately 60 per cent of the merchant pig iron of the country given out by the Department of Commerce† afford the material

value for the calendar year 1922 (represented by the second horizontal ruling above zero).

5. A modification of the above is adopted in the shaded chart of Fig. 1, in which all three subjects are combined in one picture in order to bring out the relative size of the three subjects at any one time rather than their trends through periods of time.

Consider first the chart of Fig. 1, showing the

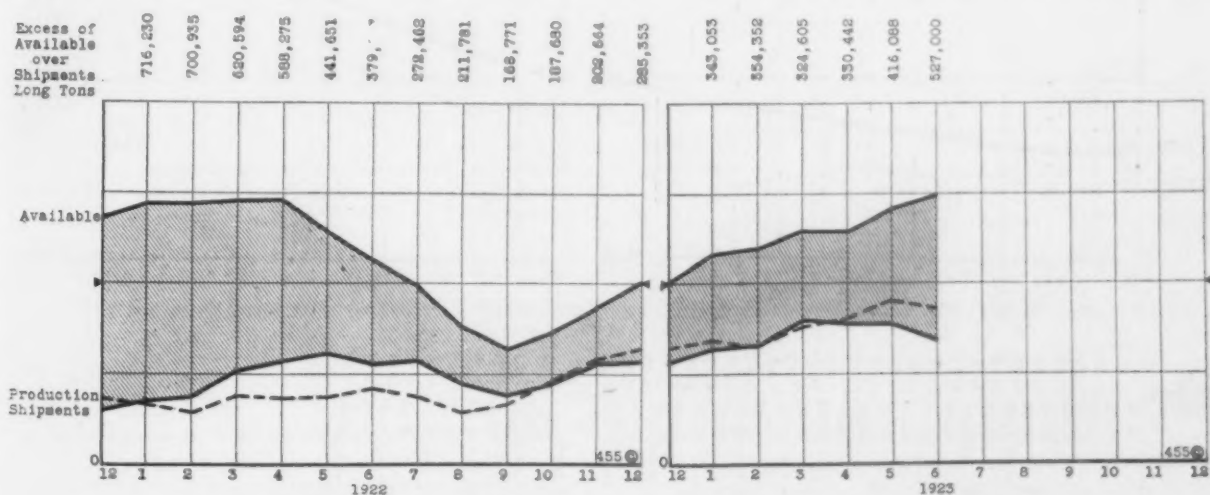


Fig. 1—The Shaded Area Shows That at End of January, 1922, There Was an Excess of Two Months' Average Shipping Requirements, But By Late September the Excess Was Only a Little Over a Half Month's Supply

and comparable charts give a method for visualizing some of the salient features of the situation.

A brief description of the charts which the author has found effective in the analysis of business operations, and used herein, will facilitate their interpretation.

1. The horizontal or time scale is uniform throughout the series.
2. The bottom or base line always has a zero value.
3. The vertical scale for each subject charted is so selected that the eye quickly grasps relative changes from the relative slopes of the curves.

4. Only one subject (for example, Production) is shown on each chart, but it is presented in two phases, the thin line showing the current monthly fluctuations above and below the average for 1922 (represented by the first horizontal ruling above zero), and the thick trend line showing the annual or long pull tendency in relation to the corresponding

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†Supplied to Department by American Pig Iron Association.

relative size, in tons, of "Shipments," "Production" and "Averages" (stocks at the first of the month plus production of the month). The first horizontal ruling of the chart above zero is made to equal the monthly average of "Shipments" for the calendar year 1922. The value of each point in all three curves can thus be seen quickly in terms of this average value. The shaded portion indicates by its varying thickness the tonnage of stocks in excess of shipping demands.

Note that when the dotted "Production" line falls below the line for "Shipments" that this excess decreases (the shaded strip becomes narrower) and vice versa. Note that at the end of January, 1922, this excess represented over two months' average shipping requirements, that this decreased by the end of September to a little over a half month's supply, but that it gradually in-

creased to sufficient for a month and a half at the end of June, 1923, in spite of large increases in shipments during those nine months. This means increasing amounts of money tied up in inventory, more than three times as much at the end

tionship is specially significant when it is remembered that these trend lines show the "long-pull" tendency rather than the current month movements. A little reflection will make it clear that there is a definite cautionary message here for

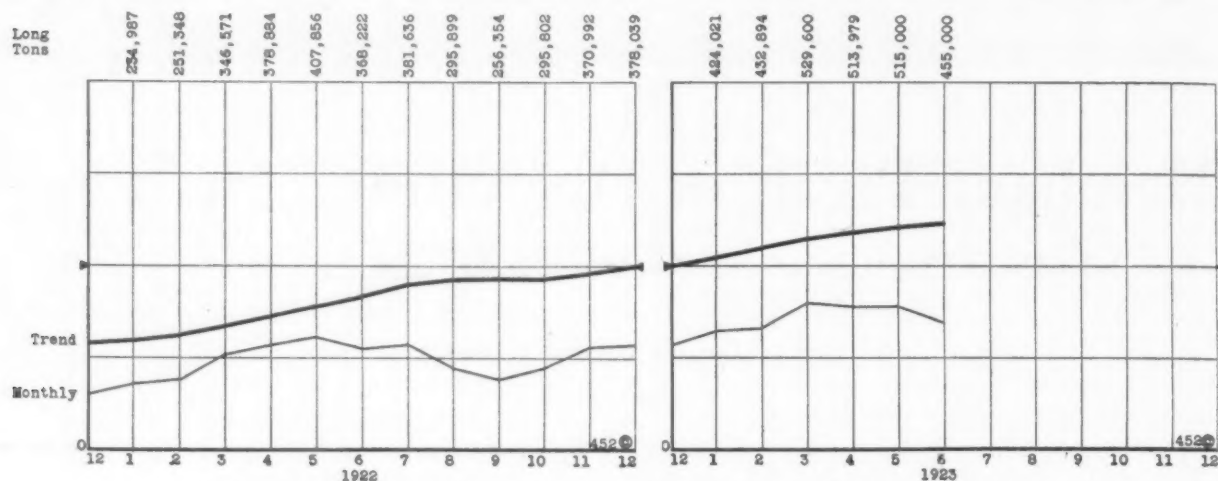


Fig. 2—The Upper Line Shows the Almost Continuous Upward Trend of Shipments

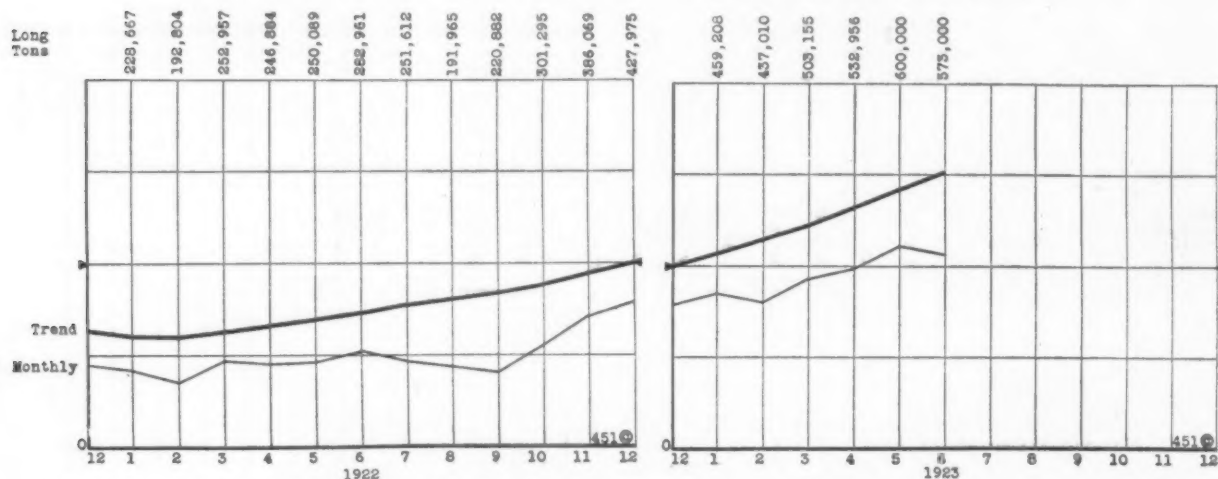


Fig. 3—Compared With Fig. 2, the Trend of Production Shows An Upward Movement Greater Since Early August Than the Trend of Shipments

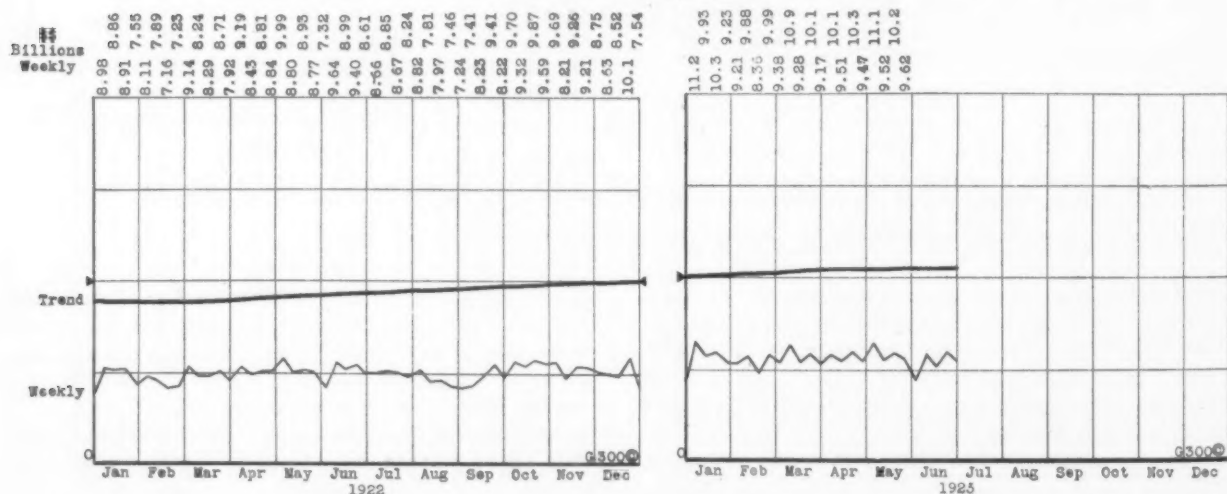


Fig. 4—The Trend of the Buying Activity of the Ultimate Consumer Shows Tendencies With Which Figs. 2 and 3 Should Be Compared

of June, 1923, as at the end of September, 1922.

Compare now the two charts in Figs. 2 and 3, showing respectively the movements of "Shipments" and "Production" and follow the two trend lines. Note the ever increasing upward movement of production in spite of the flattening out of the trend of shipments, particularly during the six months of the current year. This rela-

tionship is specially significant when it is remembered that these trend lines show the "long-pull" tendency rather than the current month movements. A little reflection will make it clear that there is a definite cautionary message here for those who determine production schedules. It may be of interest to point out that the tendencies mentioned were reflected month by month from as early as August of last year, ever since which time the steepness of the upward slope of the production trend has been greater than that of shipments.

It will be of interest also to compare these

same two trends with that in Fig. 4 of "Debits" as reported by the Federal Reserve Board. These figures of debits to individual accounts represent money over the counters of the banks of the country for individual, industrial and commercial purposes. They reflect quite directly the buying activity of the ultimate consumer and the tendencies shown may well be taken into account by the industrialist when he considers his own production schedules and prices. In the last analysis the man in the street pays for the pig iron pro-

duced, and while pig production can be pushed up at any pace the furnace owners desire or can afford, it is well for them to keep a weather eye on what the general public is doing about purchases. by the accompanying charts. To be sure, these picture the consolidated results of many independently motivated producers, and corrective action of the group is not so simple as though all were under direction of a single authority. But with the existing development of statistical data and analytical methods much may be accomplished, and with decided savings when the individual establishments apply the methods here illustrated to the current study of their own operations and compare them with the broader ten-

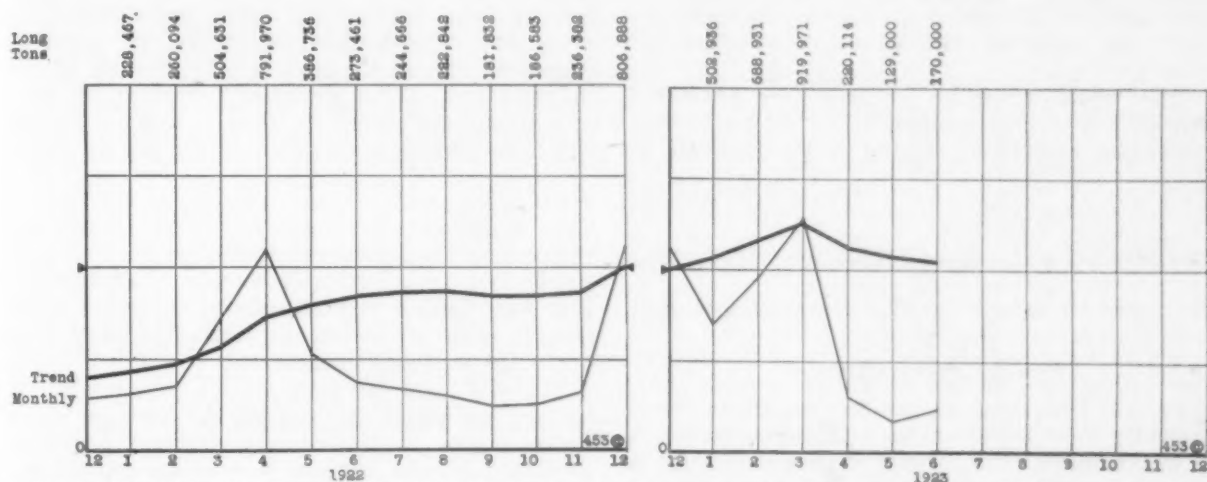


Fig. 5—How Sales Are Running May Well Be Kept In Mind In Connection With Production and Shipment Trends. Figs. 3 and 2.

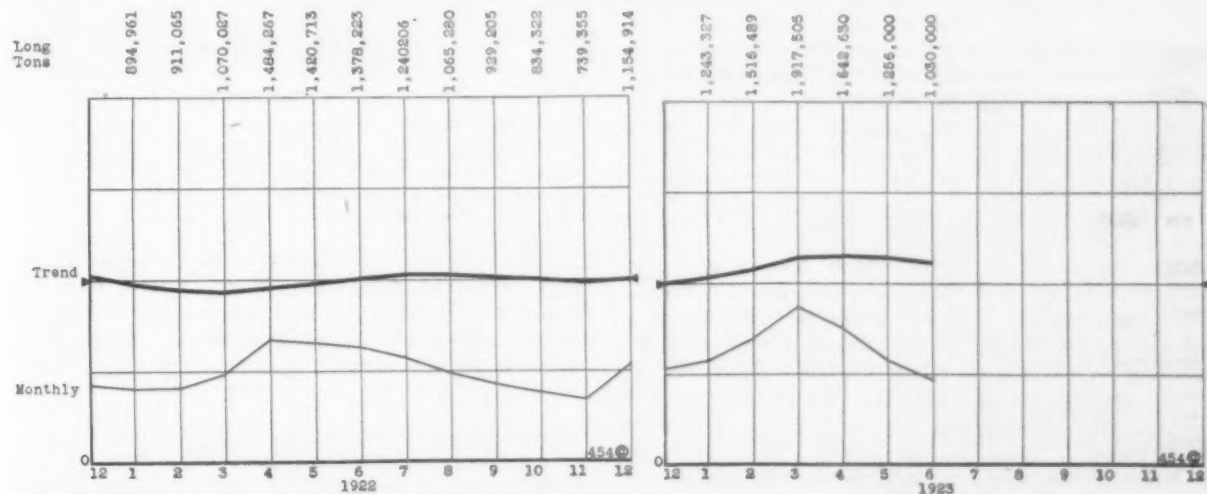


Fig. 6—The Trend of Unfilled Orders May Be Compared With the Trend of General Business Activity Reflected In Fig. 4

duced, and while pig production can be pushed up at any pace the furnace owners desire or can afford, it is well for them to keep a weather eye on what the general public is doing about purchases.

Note the difference in the slopes of production trend and debits trend, particularly during the current year. Note also that the shipments trend is more nearly parallel to debits and shows the same tendency to flatten out in the second quarter of this year.

Every thoughtful industrialist recognizes the economy of steady, uniform production schedules. In the abstract, the stabilizing of industrial activities is conceded to be desirable in the interests of the investor as well as for the benefit of the worker. Despite these facts, however, note the "feast-or-famine" production rates over the relatively short period of eighteen months pictured

dencies of their group and of the public. A large measure of stabilization of the pig iron industry is possible if the responsible executives desire it.

"How are sales running?" is a frequent inquiry of the executive, and the answer usually comes in terms of this month's or last month's tonnages or dollars of sales. It is more pertinent to ask how the *trend* of sales compares with that of production and with that of shipments. Fig. 5, in comparison with Figs. 2 and 3, not only answers these inquiries but also gives a fair indication of where these factors are heading. The practice of booking orders for future delivery is clearly shown by the sharp peaks of April and December, 1922, and March, 1923, in the monthly curve (thin line) of Fig. 5, and in turn its effect is shown in the irregularity of the trend line. Even with these irregularities to confuse the picture it is clear that there is no warrant in the progress of

"Sales" for the continued boosting of production.

The balance of "Unfilled Orders" is perhaps a better guide than "Sales" in this connection, but if viewed simply from the month-to-month values (thin line of Fig. 6), it is likely to lead one into a too frequent alteration of production plans. The long-pull trend, as shown by the heavy line of Fig. 6, is a safer guide. While this swings slowly up and down during the period covered by the charts, it is less affected by the temporary fluctuations of sales, production and shipments. Comparing its general direction from end to end of the eighteen months it will be seen that it approximates that of the trend of general business activity as reflected in the chart of "Debits" (Fig. 4).

The whole series of pictures here presented suggest not a drastic curtailment of production but rather a steady checking of the increase of

production until consumption has more nearly caught up.

The individual operator will, of course, obtain a better guide for his policies by setting up his own statistics of his various company operating factors for comparison with each other and with those of the industry as a whole.

Obviously there are important factors to be considered in the problem other than those that have been mentioned, such as prices, quantities of various grades of product, costs, transportation, ore and fuel resources, the activity of consuming industries, etc., and no analysis is complete which ignores them. The facts above presented, however, do suggest the possibility of securing a greater degree of stability of operation of the industry and offer a means of currently studying its characteristics with a view to making correction where needed.

GERMANY'S MACHINERY TRADE

Continued Shrinkage in Business and in Output Per Worker

(Special Correspondence)

BERLIN, GERMANY, July 5.—The manufacturers of machinery form one of the most important groups in German industry. The number of persons engaged in such manufacture is now estimated at about 700,000. The difficulties with which the producers of machinery have had to struggle since the war from the general political and economic situation have grown daily. The results of work have been diminished in the first place by the sudden introduction of the eight-hour labor day and the resulting disharmony among the various groups in the metal-working industries. The supply of foundry pig iron for castings as well as that of rolled and forged material of every kind has diminished steadily and there have been many disagreeable discussions between the producers and consumers. The uncertainty from the fluctuations in the value of the mark and its rapid depreciation have greatly aggravated the situation. In many cases it was impossible for the manufacturers to fill orders placed at fixed prices. The numerous disputes with the laborers' unions, the increasing wages and the want of skilled workmen and of dwelling houses, the onerous taxes, the decrease of home capital power, the tendency in all parts of the world to increase custom duties—all these circumstances were so many handicaps to the machinery industry in Germany.

The sudden reduction of the capacity of the German iron and steel works after the war brought on the "Eisenwirtschaftsbund," by which under the authority of the Government the production, distribution and prices of all iron and steel products were regulated. This movement paved the way for the voluntary organization of the manufacturers of machinery under the guidance of the Verein Deutsches Maschinenbau Anstalten, which was founded some thirty years ago. Under the able secretaryship of Mr. Froelich the membership increased rapidly and comprises now about 1200 firms employing a total of 535,000 persons. The Verein is composed of 12 principal groups and 120 secondary groups, comprising all the different branches of the machinery industries. Their common purpose is the representation of all machinery manufacturers and dealers in domestic as well as export trade matters. In a remarkable report presented to the Verein at its recent annual meeting these two facts were emphasized:

1. A continuing reduction in incoming orders.
2. A diminution of output per worker.

About 700 establishments have given data showing clearly that the reduction of business which began in 1921 went further in 1922, both in the domestic and foreign trade. Of course, the position of most of the works has weakened considerably.

But still more dangerous for the prospects of the German machinery industry is the fact, to which statistics give ample testimony, that the production per head has decreased in a most remarkable manner. From carefully compiled data it appears that the per capita machinery production in pre-war years was as follows:

1910.....	6.0 tons	1912.....	7.4 tons
1911.....	6.9 tons	1913.....	7.7 tons

In the time after the war the decline has been to the figures shown below:

First half of 1921.....	2.2	} 4.0 tons
Second half of 1921.....	1.8	
First half of 1922.....	1.8	} 3.9 tons
Second half of 1922.....	2.1	

The causes for this reduction are to be found in the many handicaps mentioned above. There have been complaints also that the lessened production has been due in considerable degree to a lack of good will on the part of the workers.

Pipe Foundries and Pig Iron

In its last issue, *Pipe Progress*, the publication of the American Cast Iron Pipe Co., has this comment on the pig iron situation as related to the cast iron pipe industry: "The big melters, such as the cast iron pipe foundries, are believed to have contracts for iron sufficient for three or four months' operations. The pipe foundries were forced into this position by their customers, as we have stated recently, when self-protection demanded that iron orders be placed as fast as pipe orders were booked. This has turned out to be a fortunate situation, as the most of this iron was contracted for at lower prices than the peak market and pipe prices therefore have not gone as high as the current iron market of the past several months would have seemed to warrant."

The Interstate Commerce Commission in a decision announced last Saturday ordered cancellation of suspended tariffs proposing to increase rates on coke from points in Pennsylvania and West Virginia to Rock Island and Moline, Ill., and Davenport, Iowa, and Omaha. It was proposed to increase the rate from the Connellsville region to the first three named cities from \$6.17 to \$6.55 per ton. The movement of coke involved is extremely slight.

NEW PROFIT SHARING PLAN

United Alloy Steel Corporation Adopts Amendments Suggested by Experience

A new profit sharing and employee insurance plan was recently adopted by the United Alloy Steel Corporation, Canton, Ohio, under which employees are permitted to share in the profits by the purchase of stock in the corporation, on which they are paid profit-sharing dividends, in addition to the regular dividends, and all employees, whether subscribers for the stock or not, are protected by group insurance. However, those who participate in the profit-sharing plan are given larger insurance protection than the non-subscribers. This makes the plan a combined profit-sharing and insurance plan.

Before adopting the plan the company made a thorough investigation of profit-sharing plans in use by many other industrial companies, and in the preparation of the details of its plan it adopted no particular innovations in profit sharing but selected features of other plans already in use that it regarded as most satisfactory. It is of interest to note in this connection that in the adoption of the new plan the corporation abandoned as unsatisfactory a former profit-sharing plan which rewarded employees who had been in its service for five years, and formulated the new plan with the idea of sharing profits with those who show a special interest in the company, holding that there can be no justification of profit sharing unless it is a means of cultivating and holding a real interest in the company's success and welfare by those participating in the plan.

Mr. Charls Gives His Views

George H. Charls, vice-president and general manager of the corporation, expressed his views regarding profit sharing in the following statement:

"No profit-sharing plan is practical which rewards the employee who shows a lack of interest in the company's welfare in the same degree as one who possesses and manifests great interest and works hard for the company's success. This is the fundamental principle, and any plan which ignores it is surely doomed to failure. Our former profit-sharing plan did this very thing, and those participating were rewarded on the basis of years' service, regardless of special individual interest in work done. Further, those with the corporation less than five years had no opportunity to share, regardless of the amount of interest displayed in its behalf. This plan excluded the majority of the employees in the organization and was discontinued for these reasons."

Under the new plan, a person employed by the company at least three months can subscribe through the company's treasurer for the purchase of shares of the corporation's stock up to an amount equal to one-third of his annual earnings, but not exceeding twenty-five shares. This subscription is entered at the ruling market price. Interest is charged at 5 per cent annually on the balance due on the stock after the employee has been credited with his monthly cash payments and the regular dividends. In case regular dividends are discontinued, the profit-sharing dividend will also be discontinued, but at the same time the 5 per cent interest charged will automatically cease until the dividends are resumed. The stock will be held in trust for the employee until fully paid for. Payments on the stock are to be made at the rate of 50c. per share per month, deductions for these payments being made from the employees' wages.

Stock Held by Trustees

The stock will be held by two or more trustees appointed by the board of directors. The trustees will accumulate for contingent credit upon the purchase price all dividends declared, until the stock is fully paid for and the stock certificate delivered to the purchasing employee. However, the stock certificate will not be delivered to the purchaser before the expiration of four years of continuous employment. The profit-sharing

dividend is credited on the number of shares purchased at the rate of \$3 per share annually during continuous employment, the par value of the stock being \$50, and the payment of this is contingent on the payment of the regular quarterly dividends. Should the employee be in arrears on his regular stock payments of 50c. per share per month, he is not credited with the profit-sharing dividends. Should he be discharged, or leave the company's employ or make application for withdrawal from the plan, he will not be credited with either the profit-sharing or regular dividend.

In case employment with the company ceases for any reason before the stock is fully paid for, all cash payments will be returned, together with 5 per cent interest, the employee losing all claim on the accumulated dividends. All credits under the plan are based on full years of continuous service.

When Employees Are Laid Off

Employees temporarily laid off owing to curtailment or suspension of operations and who return as soon as advised of the resumption of operations are considered as being continuously in the corporation's employ. Employees absent more than six consecutive days are considered as having discontinued their employment. A subscription for stock does not deprive the company of the right to discharge an employee. In case an employee dies before he has paid for his stock and he has continued his employment up to the time of his death or last illness, the corporation will deliver to his beneficiary the number of shares of stock which his cash payments and accrued dividends will pay for. In case of total disability due to accidental injury sustained while engaged in work at the plant, a similar settlement will be made with the employee. The corporation reserves the right to amend the plan or to terminate it altogether at the end of any year. In that event settlement will be made with each employee under the terms governing withdrawal.

Under the plan if an employee subscribes for stock at \$40 per share and makes regular payments and is credited with \$2 per share regular dividend and \$3 per share profit-sharing dividend per year, and is charged 5 per cent on the balance due on stock subscription, the total cost of the stock will be \$21.90 per share.

Under the insurance plan, the company insures the life of its employees for \$500, but in case the employee is a subscriber to the stock, the insurance is increased to \$1,000. This amount is further increased to \$1,500 should the employee stockholder have been in the corporation's continuous employment for more than five years.

The profit-sharing plan was placed in effect April 1, and during the first three months under its operation over 2700 employees, or approximately 30 per cent of the total employees, subscribed for stock, their subscriptions aggregating over 45,000 shares.

Invitations have been issued by the New England Coal & Coke Co., Boston, to members of the New England Foundrymen's Association, for a cruise about Boston Harbor and an inspection of the company's foundry coke plant at Everett, Mass. The invitation is extended in cooperation with the association's regular August meeting on Wednesday, Aug. 8. W. J. Lavelle, manager coke sales, is in charge of arrangements. Entertainment includes a buffet luncheon during the harbor trip and a shore dinner at the City Club, Boston, following the inspection of the Everett plant.

The Otis Steel Co. expects to place its new hot strip steel mill in operation in August and its cold-rolled strip mill in September. Its new open hearth plant will not be ready for operation until the first of the year.

The Canadian Pacific Railway Co. has placed an order with the Algoma Steel Corporation, Sault Ste. Marie, Ont., for 35,000 tons of rails. The order, it is understood, will be sufficient to keep the rail mill busy until the end of September.

EMPLOYMENT AND WAGES

Some Increase in Car Building and in Iron and Steel—Wage Drop in Automobiles

The U. S. Department of Labor through the Bureau of Labor Statistics has presented reports concerning the volume of employment in June, 1923, from 6441 representative establishments in 50 manufacturing industries, covering 2,251,565 employees whose total earnings during one week in June amounted to \$60,066,469. Identical establishments in May reported 2,251,037 employees and total payrolls of \$60,409,157. Therefore in June, as shown from these unweighted figures for 50 industries combined, there was an increase over May of less than one-tenth of one per cent in the number of employees, a decrease of 0.6 per cent in total amount paid in wages, resulting in a like decrease in the average weekly earnings.

In metal working lines, an increased employment of 2½ per cent is indicated in iron and steel and of 2.9 per cent in car building, comparing the returns for June and May. An increase of 1 per cent is shown in found-

ries and machine shops and a decrease of ½ per cent in automobiles. Practically stationary wages are shown except in the automobile industry, where the amount of payrolls was lower in proportion than the number of employees. The information tabulated is as follows:

Periods	Number of Estab-lishments	Number of Men	Week's Payroll	Average Weekly Pay
<i>Iron and Steel:</i>				
May, 1923...	166	211,024	\$6,390,933	\$30.28
June, 1923...	166	216,264	6,487,863	30.00
June, 1922*...	111	120,871	2,605,603	21.56
<i>Automobiles:</i>				
May, 1923...	180	263,216	8,925,870	33.91
June, 1923...	180	261,969	8,474,064	32.35
June, 1922*...	37	109,090	3,560,005	32.64
<i>Car Building and Repairing:</i>				
May, 1923...	187	147,739	4,419,380	29.90
June, 1923...	187	152,026	4,571,820	30.07
June, 1922...	57	45,216	1,259,580	27.85
<i>Foundry and Machine Shops:</i>				
May, 1923...	451	136,658	4,054,644	29.67
June, 1923...	451	137,960	4,123,064	29.88

*As present reports cover many more plants, the June, 1922, figures are of interest only as indicating changes in wage rates.

OLD AND PROGRESSIVE

Ninety-Fifth Anniversary of Morris, Wheeler & Co. Is Celebrated

The house of Morris, Wheeler & Co., Philadelphia, has just observed its ninety-fifth anniversary. Founded in 1828, the business was carried on for 90 years at 1608 Market Street, then removing to its present location at Thirtieth and Locust Streets, where the plant covers five acres, over four of which are under roof. An extensive description of the company's warehouse and equipment appeared in THE IRON AGE of Feb. 24, 1921.

The business was founded by Israel Morris, the grandfather of William P., Frederick W., Jr., George L., C. Christopher and Reginald H. Morris, given in order of seniority, who with Andrew Wheeler now compose the active members of the company. Mr. Wheeler's father, Andrew Wheeler, entered the business in 1847, remaining until his death in 1904. In 1884, his son, the present Wheeler representative, entered the business, and became a partner in 1892. The treasurership of the American Iron and Steel Association was in the Wheeler family for more than 40 years. Andrew Wheeler, Sr., succeeded his brother in the office and was in turn succeeded by his son.

In dealing with its employees, the personal element has figured strongly with Morris, Wheeler & Co. With the flight of time and as the business grew to larger proportions there have been changes, of course, but many "old timers" are on the payroll and others are on the pension list of the company. Two now in the service have been active for 45 years, and several have been in the same employ over 40 years. In addition to carrying those who have served long and well on its pension list, the company also carries for its people group insurance covering the entire establishment. This is in addition to State insurance. The group insurance referred to grows in value each year, reaching its maximum at the end of ten years.

Members of the company are diffident in speaking of its long and successful history, but they nevertheless treasure the legacies of the past, as evidenced by some framed documents in the fine offices of the company. One testifies how the company in 1851, at the "Exhibit of the Works of Industry of All Nations" in London, England, was given an award for excellence in iron boiler plate, then made by the company. (It still owns the plant at which the boiler plate was made.) The certificate of award was signed by Prince Albert, Consort of Queen Victoria. Another interesting document is a letter signed by Millard Fillmore, then President of the United States, notifying the company that it had been honored by the British exhibit.

Other examples are early bills of lading, one of

which had been sent to the company by a customer of 50 years' standing. This bill of lading looks like a small handbill, and has a picture of a locomotive on it. Needless to say the Pennsylvania Railroad does not bother with such details today. Another, dated Aug. 7, 1832, records the shipment of 16 tons of "cast" and "blister" steel on the good ship Monongahela, from England, the total valuation being £52 0s. 6d.

A very considerable part of the company's business is in structural steel, while it carries large stocks and does a notable business in soft, refined and Swedish iron, C. R. steel, bands, hoops, plates, shapes, sheets, tubes, rails, welding rods and all else that a large steel warehouse may be expected to have on hand.

Wheeling Steel Corporation Did Well in First Half of Year

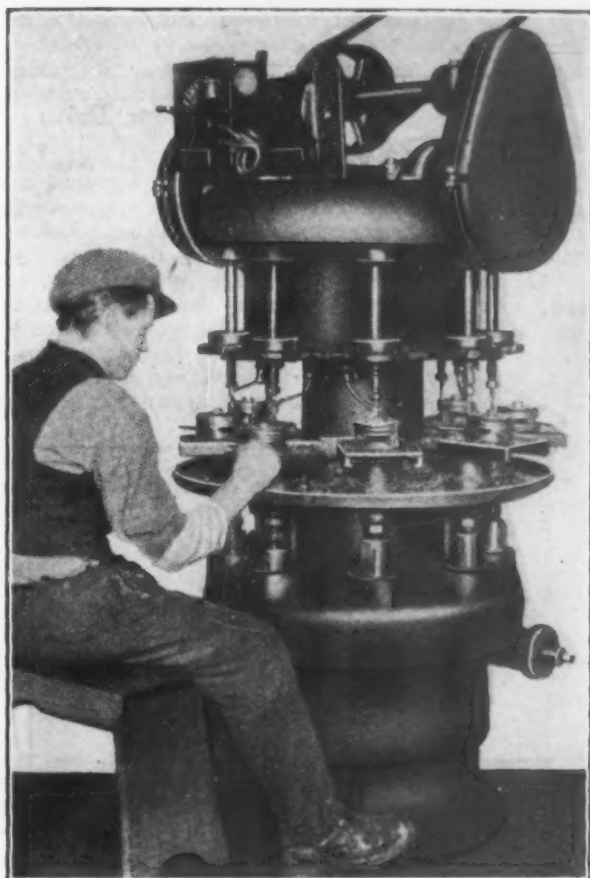
Wheeling Steel Corporation, in the six months ended June 30 last, earned net profits of \$2,792,326 and, after providing for the dividends for the period on the preferred A and B stocks, carried to the surplus, \$2,055,073. The balance over the preferred dividend requirements was equal to 4 per cent on the common stock. The report is the best the corporation has made since organization three years ago, notwithstanding that the earnings did not reflect in full the benefit of production from several of its new mills included in the large construction program and which have not yet been completed. Among the latter are included the rod and wire mill at Portsmouth, Ohio, which was started on April 23 and which it is announced will have enough trained men to operate it in full within three or four months. The company did not have the benefits from the large expenditures for additions and improvements that have been made at the Steubenville Works, which were undertaken so that the works would supply the Yorkville, Beach Bottom, Whitaker and Martins Ferry mills with sheet and tin bars.

The statement also indicates the management has continued its policy of creating very substantial reserves for depreciation and other purposes. Announcement also is made that in future a statement will be mailed stockholders showing the result of each quarter's operations. The present statement follows:

Total income after deducting provisions for repairs and maintenance of plants, etc.....	\$4,829,019
Provision for general depreciation.....	\$1,411,671
Provision for exhaustion of minerals.....	145,085
Interest on bonds and borrowed money.....	479,937
	2,036,693
Net profit for the six months.....	\$2,792,326
Surplus Jan. 1, 1923.....	\$6,010,902
Net profits for six months.....	2,792,326
	\$8,803,228
Deduct: Dividends	
On pref. A stock, 2½ per cent.....	\$32,745
On pref. B stock, 3½ per cent.....	704,509
	\$737,253
Net surplus at June 30, 1923.....	\$8,065,975

Continuous Drilling Machine

An eight-spindle continuous drilling machine here illustrated is being marketed by J. W. Brown, Jr., 101 South Thirteenth Street, Philadelphia. The carrier containing the spindles and work tables rotates continuously around the column. There is a table for each spindle and they move with their centers always in line.



The Spindles and Work Rotate Continuously Around the Column. During each revolution of the carrier, each table drops clear of the drill and the work is removed.

During each revolution of the carrier each table drops clear of the drill and is again raised and fed to the drill. The operator is stationed at the side of the machine at which the tables drop, and as the tables drop he removes the finished piece and replaces it with one to be machined. In many cases the automatic jig, which is a standard extra for the machine, is employed to clamp the work. Tools for successive operations are mounted in sequence in the spindles, and the operator advances the piece one spindle as it comes to him until the piece is finished.

The spindle drive is from a pair of spur gears on the right-end of the pulley shaft to a bevel pinion and a combined bevel and spur gear. Spindle speeds are changed by varying the ratio of the spur gears. The carrier is driven from the left-end of the pulley shaft through the change gears, planetary gearing, a second bevel pinion and bevel gear. The speed of the carrier is changed by means of change gears. The smallest member of the planetary gearing is 5 in. in diameter. For the feed a roller is provided at the bottom of each table plunger, the roller riding on a fixed cam. The cam shape determines the feed. Individual adjustment of the table is made by the right-and-left stem, which extends through both parts of the table plunger. Simultaneous adjustment of all tables is made by rotating the large nut on the table by means of the crank shown.

The depth of hole drilled with standard cam is 1-1/16 in. The capacity in cast iron is 3/4 in. diameter and 3/4 in. in 0.40 carbon steel. The maximum diameter in facing 1/16 in. cast iron is 1 1/2 in. and in steel 1 3/4 in.

The spindles are 15/16 in. in diameter and take a No. 3 Morse Taper. The distance from the spindle to the top of table when table is at highest point of the cam is 16 in. maximum and 6 1/2 in. minimum. The

distance from center of spindle to column is 6 1/2 in. and from center to center of spindles in circle is 9 in. The maximum height of the table from the floor is 39 in. The pulley is 12 x 4 in. and runs at 1200 r.p.m. The total cam movement is 2 in. All gears are cut from the solid. Shafts are of 0.40 carbon steel and spindles are of 0.80 carbon steel and mounted in ball bearings. Lubrication is amply provided for and all gears and moving parts safeguarded. A tapping attachment and cluster drill heads are available as extras.

The floor space required is 3 x 4 ft., and the weight is 3000 lb. The power required ranges from 5 to 15 hp. according to character of the work.

Ocean Freights to Pacific Coast Points to Be Advanced

The Atlantic Inter-Coastal Steamship Conference has agreed on a general advance in ocean freight rates from Atlantic to Pacific ports, via the Panama Canal, effective Aug. 1. The advance on iron and steel in most cases is 5c. to 10c. per 100 lb. and in a few instances 15c. and 20c. The present rail rate from Pittsburgh to New York per 100 lb. is 34c., to Baltimore 31c. and to Philadelphia 32c. The present ocean rate from New York, Baltimore and Philadelphia to any of the Pacific Coast ports is in most cases 30c. per 100 lb. The new rates effective Aug. 1 will be as follows per 100 lb.:

	Rate
Steel bars, bands, hoops, rods (eliminate shafting)....	0.40
Reinforcing metal, concrete, lathing, flooring, woven wire fencing.....	0.60
Billetts, blooms, ingots, muck bars (eliminate steel scrap)	0.40
Bolts, nuts, rivets, screws, washers.....	0.40
Castings, forgings, molas; wheels, sprocket.....	0.50
Boiler ends and heads, plates (eliminate plates and sheets, Nos. 12 to 16 gage).....	0.40
Plates and sheets, No. 12 or lighter gage.....	0.50
Manganese; silicon (ferro) (eliminate pig iron).....	0.40
Pig iron	0.35
Pipe (other than coils), iron or steel (not over 12 in. in diameter but over 20 ft. long, but not exceeding 40 ft.)	0.55
Over 12 in. in diameter 2 1/2 c. per 100 lb. additional for each additional inch.	
Nails, spikes, wire, staples.....	0.40
Nails, horseshoe.....	0.40
Plates, shapes and bars, bent or not bent, punched or not punched, angles, channels, plates.....	0.40
Structural iron or steel, fabricated (eliminate unfabricated)	0.55
Rails, steel ties—Will not apply on rails exceeding 36 ft.; rails over 36 ft. and not exceeding 60 ft., 10c. per 100 lb. additional	0.40
Bars, bolts, fastenings, base plates, track spikes, tie rods	0.40
Tin plate—In boxes strapped (eliminate in crates)....	0.40

All rates apply on pieces or packages not exceeding 30 ft. long, except as otherwise provided. Pieces or packages over 30 ft., but not exceeding 60 ft., subject to additional charge of 10c. per 100 lb. Over 60 ft. special arrangements must be made. Minimum C. L. weight as per official classification.

Standard Sanitary Mfg. Co.'s New Plant at Baltimore

The Standard Sanitary Mfg. Co., Pittsburgh, manufacturer of bathtubs and similar articles, plans to begin work on the foundation for the first unit of its plant to be erected on Fifth Avenue, near Camp Holabird, Baltimore, about Sept. 1. The first unit, which will be the enamelware plant, with equipment, etc., will cost about \$3,000,000. No definite plans have been made for the two additional units. H. Diescher & Sons, Pittsburgh, are the engineers in charge of the work.

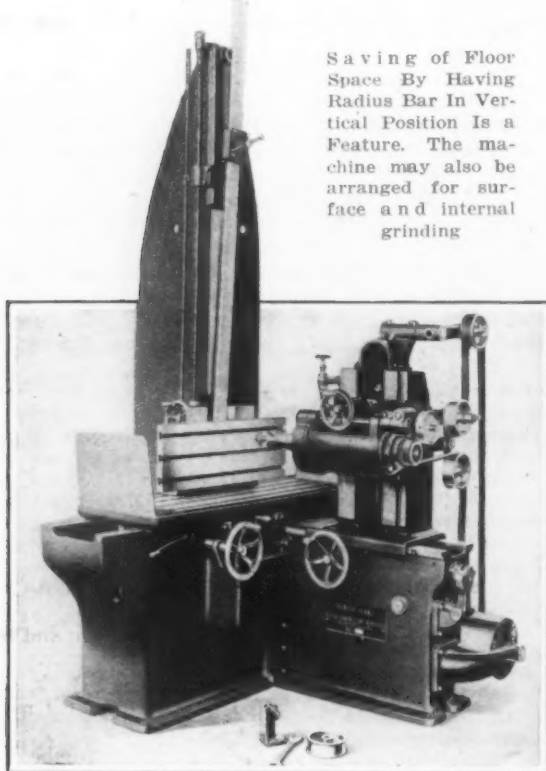
The plant is to be one-story, 2100 ft. long with some of the buildings 200 ft. and others 175 ft. wide. It is hoped that the plant will be ready for operation in the spring of next year.

Theodore Ahrens is president of the company and W. C. McKinney is vice-president in charge of manufacture.

Radius, Internal and Surface Grinder for Railroad Shop Work

Wide adaptability in railroad shop work is claimed for the heavy duty radius, internal and surface grinder illustrated, which recently has been placed on the market by the Rockford Milling Machine Co., Rockford, Ill. The saving in floor space by having the radius bar in a vertical position, as shown, is an outstanding feature.

The machine has a capacity for grinding radii from 18 to 100 in. The pendulum motion is independent of the rest of the machine, and may be detached or the radius bar swung out of the way, if desired. This ar-



Saving of Floor Space By Having Radius Bar In Vertical Position Is a Feature. The machine may also be arranged for surface and internal grinding

angement permits using the machine as a horizontal surface grinder. A standard spindle is provided for radius link grinding and light surface grinding. Provision is made for internal grinding, planetary motion to the spindle being through gearing which is adjustable in the spindle head while in motion. For heavy surface grinding the standard spindle may be replaced by another designed for that purpose.

The base is made up of two heavy castings provided with wide bearing surfaces for the horizontal table and spindle column. The vertical column for the radius bar is bolted to the back of the base; this column serves also as a motor bracket for the motor driven machine. The column is 130 in. high and the radius bar, 1 x 3 in. wide, is graduated in $\frac{1}{4}$ in. and is conveniently adjustable from the operating position by means of a handwheel.

For radius grinding the work is held in the vertical table which is secured to the radius bar. This table measures 12 x 36 in. and is controlled in its reciprocal motion by the horizontal table to which it is clamped. The horizontal table is 16 x 48 in. and has a longitudinal feed of 50 in., either hand or power feed in either direction. The reciprocating motion is automatically controlled. The tables are guarded from dust and grit.

The mounting of the spindle column and spindle head may be noted from the illustration. The column has a horizontal movement of 14 in., obtained by hand, but power feed may be provided. The spindle head has vertical adjustment of 20 in. on the spindle column. The spindle runs in ball bearings and means are provided to take up wear. Sleeves of different sizes may be applied. The driving sleeve is also connected in the housing by an eccentric spindle, providing a planetary motion for internal grinding, which can be increased up to $1\frac{3}{4}$ in. larger than the diameter of the wheel.

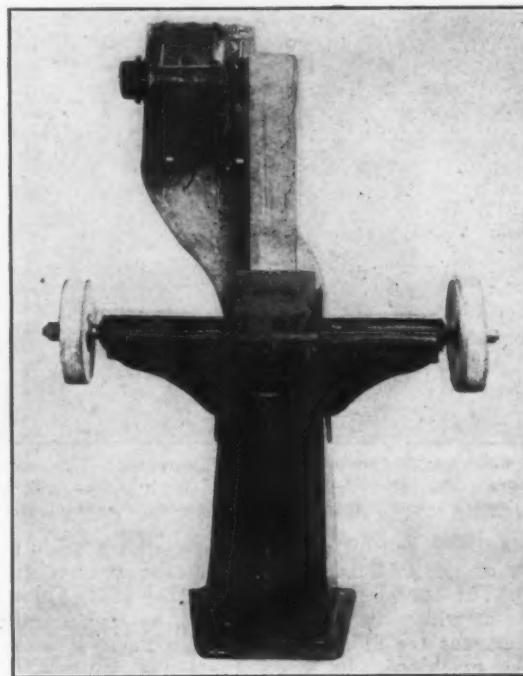
Motor drive is recommended, a $7\frac{1}{2}$ -hp., 1200-r.p.m., motor being used. A jack shaft may be furnished or the machine may be driven from the line shaft. Regular equipment includes oil pump, spindle with planetary motion for hole grinding, splash guards for the table, and a diamond holder. Heavy surface grinding spindle, power horizontal movement to the spindle column, and motor drive arrangement are extras.

The height of the machine is 12 ft. 2 in. and the floor space occupied 81 x 114 in. The weight is 6800 lb. net.

Polisher with Overhead Motor Drive

Grinding and polishing machines of the St. Louis Machine Tool Co., St. Louis, are being equipped with motor drive arranged as shown in the accompanying illustration of the company's No. 7 polisher. Ball and roller bearings are also now available for the spindles.

The motor is carried on a bracket which is bolted to the rear of the pedestal. Having the motor out of the way of the operator and the saving of floor space are among the advantages claimed for this arrangement. It is also said to prevent damage from dirt and dust that usually accumulates around a motor that is placed



Overhead Mounting of Motor Is a Feature

upon the floor, and to protect the motor from abrasive dust that frequently finds its way into a motor mounted on the spindle of the machine. There are four sets of bearings, two close to the pulley and two close to the wheels. Parts are said to be easily disassembled when it is desired to inspect the bearings.

It will be noted that the base of the machine illustrated is wider at the front than at the back. The difference in width is 4 in. The flare toward the back gives extra footing on the floor and the belt pull being toward the rear, the arrangement tends to make the machine stand more solidly. The width of the front does not interfere with the operator's feet.

The machine may be equipped with belt guards of the type shown, or the top of the column may be closed if it is desired to drive the spindle by belt from a shaft below the floor. Tight and loose pulleys may be mounted on the spindle when the drive is directly from the line shaft. The tight and loose pulley machines are provided with rack and pinion belt shifter.

A McKee revolving distributor is to be installed on the No. 3 Hazelton blast furnace of the Republic Iron & Steel Co., Youngstown, by Arthur G. McKee & Co., Cleveland.

Pipe Threading and Cutting Machine

The Landis Machine Co., Waynesboro, Pa., has added to its line an 18-in. pipe threading and cutting machine, the range of which is 8 to 18 in., and covered by one die head and one set of chasers.

The machine has a single pulley drive and is provided with eight speeds, which are obtained by means of a speed box located beneath the main spindle. A friction clutch is mounted on the main drive shaft with the pulley, or if driven by electric motor a chain sprocket may be substituted for the pulley. The operating cone of the clutch is moved by two levers located at the ends of the head stock within easy reach of the operator. The forward lever is used for starting and stopping when making up flanges. The lever in the middle is for reversing.

Gears are inclosed and, with the exception of the main driving gear and its pinion, they run in oil. The main bearings of the hollow spindle are lubricated with flat link chains which run in oil in reservoirs provided in the base. The driving pinion shaft and the reverse shafts are lubricated by sight feed oilers.

At each end of the hollow spindle there is a three-jawed independent chuck for holding the pipe during operation. The rear chuck is equipped with flange grips for fitting flanges.

The carriage which supports the die-head, the cutting off and the reaming tool is moved either by power or by hand. Power traverse is both forward and backward and is controlled by a lever located on the operating side of the carriage. In advancing the carriage toward the chuck, the lever is pulled and held until the threading position for the die is reached. In reversing the movement of the carriage, the lever is pushed forward and held. Releasing the lever stops the carriage at any point within its travel. Automatic stops prevent the die-head from coming in contact with the chuck in the forward movement and the carriage from running off the guides in the backward movement. The reaming tool may be quickly set to position and locked with a lever.

The length of the machine is 12 ft. 2 in., the height is 6 ft. The extreme width of the belt driven machine over the pulley is 5 ft. 10 in. and the width of the motor driven unit over the motor plate is 6 ft. 8 in. The weight is 22,000 lb. In the motor driven machine the motor is mounted on a base over the gear box.

The Youngstown Boiler & Tank Co., Youngstown, has booked a total of 75 55,000-bbl. oil tanks for the Corsicana field in Texas, all for comparatively early delivery. The tanks are going forward at the rate of three or four a week. This construction calls for about 11,000 tons of steel plates, which are being rolled by Mahoning Valley mills. Heavy production of oil calls for additional storage capacity and tank makers generally are having a heavy run of business at this time.

The Union Mfg. Co., New Britain, Conn., has been awarded first prize, a gold medal, by Brazil, for an exhibit of chucks at the South American Exposition.

Accidents at Coke Oven Plants

Statistics compiled by the Department of the Interior, through the Bureau of Mines, show that accidents at coke ovens throughout the United States during the calendar year 1922 resulted in the death of 29 men and the injury of 1710 employees. Of the fatalities reported, eight occurred at bee-hive coke ovens and 21 at by-product ovens. Injuries, involving a minimum of one day's disability, at beehive ovens amounted to 474, while the number reported from by-product ovens is 1236.

The injury rate at both bee-hive and by-product ovens was lower in 1922 than in 1921. The fatality rate for bee-hive ovens was also reduced, but the rate for by-product ovens increased slightly.

At bee-hive ovens 98 men out of every 1000 employed sustained injuries, as compared with 119 the year before. The fatality rate at bee-hive ovens was

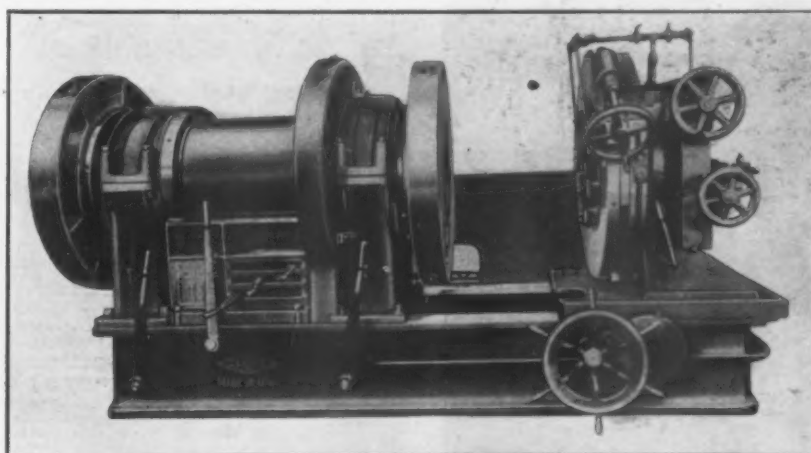
1.66, a reduction from the 1921 figure of 1.76. For by-product ovens the injury rate was reduced from 138 in 1921 to 92 in 1922, while the fatality rate rose from 1.09 to 1.57. These rates are based upon a unit of 300,000 shifts, which is equivalent to 1000 men working 300 days.

Reports to the Bureau of Mines from both bee-hive and by-

product ovens showed a total of 19,278 men employed, each man averaging 284 days of work, the volume of work by all employees being 5,470,939 man-days. Comparing these figures with 1921, they indicate an increase of 19 per cent in the number of employees, an increase of 10 per cent in average work days per man, and 31 per cent in total number of shifts worked in the entire industry.

Most of the accidents occurring at bee-hive ovens were due to falls of persons, cars and motors, burns, falling objects, coke-drawing machines, hand tools and nails and splinters.

At by-product ovens 21 employees were killed and 1236 injured, the principal causes of accidents being falls of persons, burns, falling objects, hand tools, cars and motors, nails and splinters and coke-drawing machines, in the order stated.



Machine for Threading and Cutting 8 to 18-In. Pipe. The entire range of the machine is covered by one diehead and one set of chasers

Machine Tool Exhibit in New Haven Again This Year

The New Haven branch of the American Society of Mechanical Engineers has decided to hold another machine tool exhibit at the Mason Laboratory, Yale University, Sept. 18, 19, 20 and 21. The 1922 exhibition had 135 exhibits and was attended by over twelve thousand people.

The exhibition will be held again under the joint auspices of the New Haven branch of the A. S. M. E. and the Engineering School of Yale University. The exhibition is intended as a cooperative effort to show the best equipment and methods for the benefits of manufacturers, engineers and the engineering school.

A program is promised to include papers by leading authorities and motion pictures of methods and processes. Information regarding the exhibition may be obtained from the New Haven branch of the American Society of Mechanical Engineers, Mason Laboratory, 400 Temple Street, New Haven, Conn.

Tramrail System in Car Wheel Foundry

Efficient handling of material and reduced labor costs are expected from the tramrail system recently installed in the foundry of the Standard Car Wheel Co., Cleveland. It does the handling from the time metal leaves the cupola until the car wheels are delivered to the sand blast for the final operation in the plant. The conveying system is partly hand and partly electrically operated.

The cupola at the side of the molding room is tapped into a 5-ton bull ladle from which 1-ton pouring ladles are filled. The latter are carried over the molding floor by a hand-propelled trolley to which an air hoist is attached. Over the foundry floors are six 1-ton hand-operated trolleys equipped with air hoists. These operate on six straight-line tracks that extend down



Electric Hoist and Traveling Conveyor Delivers Castings to the Soaking Pits. It also takes the wheels from the pits to the storage floors at the left

to a transverse aisle near the lower end of the foundry, adjoining the soaking pits. Car wheels are lifted from the molds by means of tongs suspended from the air hoist and are carried by a hand trolley down to the transverse aisle. While still suspended from the hoist the riser is knocked off. The wheel is then transferred to another trolley by means of a rod and chain attached to the air hoist of this trolley. The track of this transverse trolley extends the length of the aisle and curves around beneath an electric conveyor that serves the soaking pits. The wheel is dropped on the floor beneath the latter conveyor and the core is knocked out.

There are four rows of soaking pits and above each row a tramrail on which runs a 1-ton electric hoist and electric carrier operated from a platform attached to the conveyor. Two of these carriers are provided for handling wheels to and from the soaking pits. After the core is knocked out the electric hoist lifts the wheel with scissor-type tongs that are inserted in the bore and carries it to a soaking pit. From the soaking pits the electric hoists convey the wheels around to a storage floor in the adjoining bay, and from storage to a sand blast machine at the end of the bay, from where they go to the storage yard.

Three electric carrier tracks are provided in the storage bay. The various conveyor tracks are connected with switches and crossovers as needed to make the system complete.

With the conveyor system the whole soaking pit unit is handled by three men. One man transfers the wheel from the air hoist, that brings it from the foundry floor, to the hand-power hoist operating in the aisle and pushes it to a soaking pit floor where the second man knocks out the core and hooks the wheel on to the electric carrier. The third man operates the electric

conveyor and places the wheel in the soaking pit. The conveyor system handles a production of 250 car wheels per day.

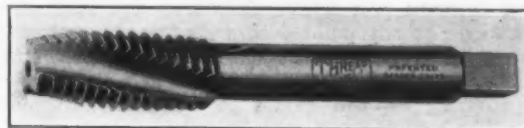
The tramrail installation was furnished by the Cleveland Crane & Engineering Co., Wickliffe, Ohio. The air hoists were supplied by the Curtis Pneumatic Machinery Co., St. Louis.

Spiral Fluted Tap

A tap known as the Threadwell is being marketed by the Wells Corporation, Greenfield, Mass. It has right-hand spiral flutes, the cutting action of which, like a twist drill, is said to be designed on the same "shearing" principle as a properly ground lathe tool. Each tooth has a positive rake that "cuts" the metal. Each cutting edge has three points of clearance; rake angle of spiral, rake angle of hook in flute and clearance due to relief. These are said to be similar in effect to the three points of clearance in a lathe turning tool known as the back rake, side rake and undercut clearance.

The right-hand spiral, as in a twist drill, is said to curl the chip and propel it upward through the flute and "out" of the hole with a propelling action similar to that of a spiral conveyor, and without jamming or wedging of the chips. This feature is emphasized as an advantage in machine tapping, as the spiral flute tap does not need to be backed out to loosen the chips, but taps out the hole in one continuous forward motion. This chip conveying action is also emphasized as an advantage in tapping out "blind" holes. The spiral flute design is claimed to eliminate the necessity for a set of taper, plug, and bottoming taps. Unless otherwise specified the tool is made with a short "plug" chamfer, and will tap all except "blind" holes where a full thread is necessary clear to the bottom. In this case a very short chamfer is ground on the tap, and this together with the advantages described is said to make the tool of unusual value as a "bottoming" tap.

The chamfering of the tap is a feature. In addition to eccentric relief, an extra chamfer is given at the point where the taper and straight parts usually meet. Easy starting is a feature. The edges of the starting or chamfered threads are rounded over and sharp corners taken off. This narrows the tooth and is intended to permit the thread to catch quickly without reaming. The tap has a factor of safety of eight, which is pointed to as due not only to the shearing design of the teeth, which eliminates much of the cutting strain, but also



Spiral Fluted Tap. The chip conveying action is a feature

to the rigidity of the tool which has a less number of flutes and stronger lands than commonly found. Rigidity of the lands is said to prevent thread binding under torsional strain, also to make the tap less liable to spring in working and permit it to hold its size and lead in any material.

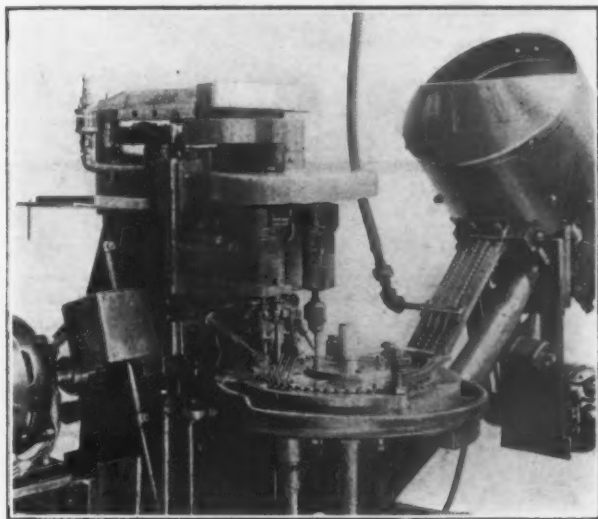
Unusually complete information about steel joist construction is furnished in a 32-page booklet entitled "Truscon Steel Joist Data Book," issued by the Truscon Steel Co., Youngstown. A series of photographs of buildings in which steel joists made by the company are installed composes the first part of the booklet. There follow tables of properties of various kinds of joists and channels, tables of safe loads on several types of joist construction, weights of joists and building materials, coefficients for deflection, and tables of safe stresses. The last part of the booklet is devoted to specifications for the company's joists and detailed information about all kinds of steel joist construction, with numerous drawings, photographs and tables.

Dial Fed Tapper Equipped with Hopper

The dial-fed multiple-spindle tapping machine of the Anderson Die Machine Co., Bridgeport, described in THE IRON AGE of Jan. 26, 1922, is now available equipped with automatic hopper feed as illustrated, for tapping knurled battery nuts.

The hopper is driven by an independent motor, the purpose of which is to fill the three chutes or runways leading from the hopper to the dial, previous to starting the machine for the tapping operation. The mouths or exits from the hopper are arranged so that the nuts may leave the hopper only in one way, turned upside down for the tapping operation. A series of hooks or ejectors, arranged on the inside of the rotary plate that forms the bottom of the hopper, serve to dislodge nuts that have the opposite end turned up and which tend to obstruct the feeding of nuts that are properly turned.

When the indexing dial is stationary, the lower



Multiple Spindle Tapper with Automatic Hopper Feed for Taping Battery Nuts

end of the chutes align with the openings in the dial, and the nuts are fed by gravity into the proper openings in the dial. As the dial indexes a gate provided closes the lower end of the chutes, which prevents nuts from projecting beyond the proper point and obstructing the free rotation of the dial. This gate is timed and is actuated by the movement of the dial itself.

The ratchet, spacing the dial, has 18 teeth, and for each of these there are three openings, or 54 stations, around the dial. For each stroke of the machine three nuts are tapped. The nuts are clamped in the tapping position by means of the cam mounted on the vertical camshaft of the machine. A roll and plunger with bracket forms standard equipment. From the plunger there is a series of three clamping jaws, the two side jaws being operated by means of a toggle.

The operating member of the toggle gear is secured in a floating position on the plunger operated by the cam. In this way variation in the diameter of the nut is compensated for. The central or third position is clamped by a jaw which is mounted directly on the plunger that provides the movement for the clamping jaws. The timing of the cam for accomplishing this is, of course, adjusted to suit the various other movements and functions of the machine.

The ejector is made up of three fingers mounted on a bracket which moves up and down with the taps. They are arranged to swing outwardly and if necessary force the nut out of the dial.

The machines are timed to run 40 strokes a minute, producing theoretically 120 pieces a minute or 7200 an hour. It is claimed that in actual use three of the machines, running on a 20-hr. per day schedule, have tapped from 375,000 to 421,000 pieces.

Need of Technically Trained Men in Steel Industry

President Eugene G. Grace of the Bethlehem Steel Co., in the August issue of what is known as Lehigh Leaflets, published by Lehigh University, Bethlehem, Pa., will contribute an article on steel and research. From an advance copy of the article the following extracts have been taken:

Today we are witnessing production of iron and steel at an ascending rate which, if continued for the span of but one generation, will yield more tons, it seems fair to say, than have been made since man appeared on the earth. This prospect invites, as never before, improvements, however small, in processes and materials.

One of the needs of the industry, always present, is men technically trained along practical lines. The highly theoretical engineer can accomplish but little in a manufacturing organization and it is generally necessary that the college graduate gain five or ten years' practical experience before he is found of real value. This is due, many times, to his having been trained along theoretical lines only.

Our increasing knowledge of iron and its alloys has not brought us to the end of the path. Rather it has widened an ever receding horizon beyond which lie unsolved problems in chemistry, electricity, metallurgy, microscopy, mechanics and many other fields, all inviting continuing and expanding research.

New Copper Rod and Wire Mill in Chicago

The Brenner-Moxley-Mervis Co., whose temporary address is in care of the American Insulated Wire & Cable Co., 954 West Twenty-first Street, Chicago, has awarded contract for the first unit of a plant for the manufacture of copper rods and drawn copper wire. The company has bought an eight-acre tract of ground at Kedzie Avenue and the Chicago Drainage Canal. The first unit, to cost approximately \$500,000, will have a frontage on Kedzie Avenue of 116 ft. and a depth of 338 ft., and will be in operation in September. Other units will be built as the business of the company expands, the ultimate expenditure for plant and equipment to be about \$6,000,000. Present plans call for the consumption of 10,000,000 lb. of copper annually.

The new company is headed by Nathan T. Brenner, president of the American Insulated Wire & Cable Co. The vice-presidents are William J. and George T. Moxley, who are officers of William J. Moxley, Inc., manufacturer of margarine. N. T. Brenner, Jr., and Meyer B. Mervis, both with the American Insulated Wire & Cable Co., are treasurer and secretary, respectively, of the new company.

Copper rods and wire are not now extensively manufactured in the Central West, most of the existing plants being located on the Atlantic Seaboard or in Montana.

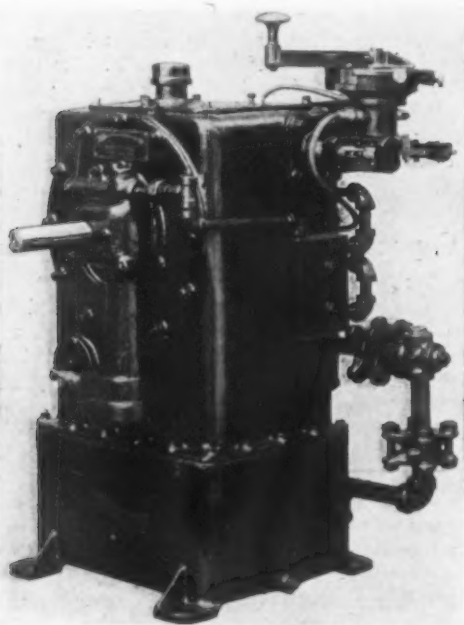
Final details of the sale of the Damascus Brake Beam Co., Cleveland, to the American Steel Foundries has been concluded, and the Cleveland plant has passed to the control of the latter company, but will continue to be operated under its old name as a separate unit. Three members of the old board have been elected to the new directorate, which will be headed by R. P. Lamont, president of the American Steel Foundries. The directors to remain are S. Livingstone Mather, John J. Stanley and H. C. Robinson. Mr. Lamont will be chairman of the board, and other officers and directors of the Damascus company will be R. H. Ripley, president; F. E. Patterson, vice-president, and A. E. Adamson, formerly secretary and treasurer of the Damascus company. Mr. Ripley is vice-president of the American Steel Foundries and Mr. Patterson is secretary and treasurer of that company. The American Steel Foundries acquired control of the Damascus company through an exchange of stock, the Chicago company giving 1½ shares of preferred stock for each share of Damascus common stock.

New Pump for Hydraulic Presses

A variable-delivery pump designed primarily for use with hydraulic presses but adaptable also to other service has been placed on the market by the Oilgear Co., Milwaukee. The new unit, which is designated as type W, has a maximum capacity of 3060 cu. in. per min. and maximum working pressure 1000 lb. per sq. in.

Steady flow of oil free from pulsation is a feature claimed. The amount of oil delivered to the press cylinder is controlled by means of a single lever attached to the stroke-changing mechanism through a hydraulically-operated control cylinder. The instantaneous response to the control handle is emphasized.

The essential parts of the new unit are similar to those of the company's type QC control pump previously described. These parts include the revolving driver carrying the cross heads and plungers, the cylinder barrel and plungers, the ground ported pintle upon which the cylinder barrel rotates, and the swinging arm by means of which the revolving barrel may be shifted relative to the driver, in order to regulate the length of the pump stroke. The assembly of the



plungers and cross heads differs from that in the type QC in that the plungers are closely coupled to the cross heads. This is intended to provide a suction action that makes it unnecessary to depend on a large auxiliary gear pump. The type W is equipped with a small gear pump to keep the running parts well lubricated and to operate the control cylinder.

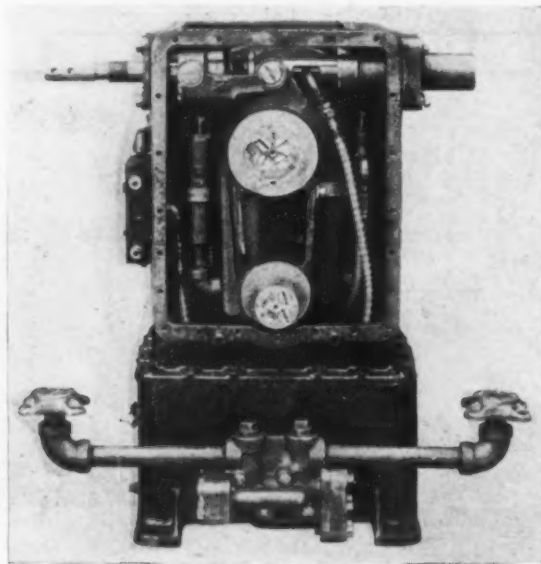
Hydraulic control for regulating the stroke of the main pump consists of a double-acting hydraulic cylinder and a piston which is attached to the stroke-changing arm by a cross yoke and two links. These are arranged so that a heavy spring holds the pins at all times against one side of their bearings in the links, cross yoke and arm, thereby preventing play in the joints. Oil pressure to the control cylinder is regulated by a small balance piston valve that admits oil to one end of the cylinder and at the same time permits it to flow from the opposite end. This construction is said to provide a hydraulic dashpot which holds the arm rigid in any position.

Oil is delivered from the ports through the passages in the main pintle down through one of the two passages provided in the casting which forms the arm on which the pump unit rotates. When oil is flowing down through one passage it is being drawn up through the other. The direction of flow in these passages depends on the direction of flow of oil from the pump. The oil passages in the arm communicate with suitable passages in the lower pintle and these in turn with the delivery and intake pipes. An automatic two-way valve is provided to assure proper direction of flow of oil to and from the sump.

Another South African Steel Merger

Proposed amalgamation of the South African Iron & Steel Corp., Ltd., and the Newcastle Iron & Steel Co., Ltd., is reported to the Department of Commerce by Consul C. J. Pisar, Capetown. Announcement of the proposed merger followed shortly upon the amalgamation of the Union Steel Corporation, Ltd., with the South African Iron & Steel Corporation, Ltd. The consolidation of the three plants will bring the combined output appreciably nearer the Government's bounty of 15 shillings per ton offered in respect of plants with a minimum capacity for iron and steel production from native ores of 50,000 tons per annum. It is reported that the new concern has the support of large and important financial houses and steel producers in England.

According to the Minister of Mines and Industries,



Variable-Delivery Pump for Hydraulic Presses. The machine with two sides of the casing removed to show hydraulic control, swinging arm and overload relief valves is above. Arrangement of control handle and piping is shown in full view at the left

the Union Steel Corporation, Ltd., Vereeniging, Transvaal, produced 14,434 tons of steel in 1921, valued at £361,468. The South African Iron & Steel Corporation, Ltd., Pretoria, Transvaal, operated only four months in 1921, and produced 1148 tons of pig iron with an experimental furnace.

The Newcastle Iron and Steel Works, Ltd., Newcastle, Natal, the latest entrant into the combine, has completed the erection of a blast furnace with a capacity of 150 tons per day. This plant is favorably situated as regards raw materials, coke, clay, etc., but has not been in active operation during the past year on account of lack of capital. For the purposes of the amalgamation, the assets of this company are valued at £175,000.

Powdered Coal for Malleable Plant

The Albion Malleable Iron Co., Albion, Mich., has decided to provide a pulverized coal installation for firing eight 20-ton malleable melting furnaces, five batteries of core ovens and an annealing oven, and it is expected that the ladle drying ovens will also be fired with pulverized coal. The installation is to be made by the Grindle Fuel Equipment Co., Harvey, Ill. It will include coal-handling equipment, a Grindle 10-ton per hr. multiple-tube dryer, two 6-roller high-side air-separation pulverizers, pneumatic conveying system equipped with automatic control device, and storage hoppers with feeding and burning equipment at each furnace.

ACCIDENTS LESS FREQUENT

Gratifying Decline in Rates in Nearly All Kinds of Iron and Steel Plants

WASHINGTON, July 31.—Definite decline in accident rates was shown in the iron and steel industry as a whole as between the two five-year periods of 1910-1914 and 1915-1919, while the two years following, 1919-1920, had lower rates than those for the average of the preceding five years and there was a slight decline from 1920-1921. Lucian W. Chaney of the Bureau of Labor Statistics, Department of Labor, is author of a pamphlet on "Statistics of Industrial Accidents in the United States" just issued, which reveals the trend of accident frequency in the iron and steel and other industries of the United States.

Accident rates for blast furnaces are among the highest found in the industry, it is pointed out, but as an offset some of the most definite reductions which can anywhere be found are reported for this department. While the figures for total accident frequency in the Bessemer department make a satisfactory series the severity rates for the second five-year period are higher than those for the first five years and 1921 is higher than 1920.

Open hearths are shown to have a marked decline in accident frequency, while the severity rates, though in less degree have still definitely declined. The accident rates for foundries are somewhat disappointing as regards the progress of accident prevention. As compared with the basic metallurgical processes the foundries have a lower accident severity with a higher accident frequency.

Heavy rolling mills show a steady and marked decline in accident frequency, but in severity the second five-year period was slightly higher than the first. In 1920 and 1921, however, there was quite a drop. From the first five-year period to 1921 severity declined 67 per cent. Plate mills exhibit one of the most uniform declines in both frequency and severity of accidents

which is on record. Frequency had a decline of 54 per cent and severity of 50 per cent during the period covered.

The accident rates for sheet mills were strikingly low at the beginning of the period and from that low point decline irregularly but definitely. Tube mills share with sheet mills the lowest accident rates, both frequency and severity, found in any of the departments of the iron and steel industry. A notable feature of their experience is the very striking decline in accident frequency which the table shows. This is related closely with the large use, in mills of this type, of a foreman's bonus for accident reduction.

The production of the structural elements of bridges and steel frame buildings is shown by the accident rates for fabricating shops to be a matter of considerable hazard. These accident rates have declined in considerable measure and rather regularly. In wire drawing a very notable decline is to be observed in accident frequency.

The report includes a table which provides a precise idea of the trend of events in specified departments, the accident rates being computed for five-year intervals from that ending in 1911 to that ending in 1921.

The decline in accident frequency from the first period to the last in the several departments was as follows: The industry, 43 per cent; blast furnaces, 52 per cent; Bessemer, 64 per cent; open hearths, 47 per cent; heavy rolling mills, 51 per cent; plate mills, 46 per cent; and sheet mills, 24 per cent. In accident severity the decline was as follows: The industry, 32 per cent; blast furnaces, 46 per cent; Bessemer, 29 per cent; open hearths, 23 per cent; heavy rolling mills, 25 per cent; plate mills, 50 per cent; and sheet mills, 45 per cent.

Foundries is the only department to show an increase for both accident frequency (5 per cent) and severity (20 per cent). Two departments, plate mills and sheet mills, show a greater decline in accident severity than in frequency; the others have a greater decline in frequency.

WELDING IRON ELECTRICALLY

Use of Gray Iron Electrodes on Iron Castings by a French Investigator—How Carbon Was Added

A brief and very interesting note on the welding of cast iron with the electric arc appeared in the April issue of the *Revue de Metallurgie*, by M. Lebrun. He says this solution of a difficult problem was reached in France toward the end of 1920. Previous efforts had not given a proper weld. In the case of steel electrodes, which were generally used, a thin layer of white iron between the added metal and the piece to be welded was found which was brittle and without solidity. When gray cast iron electrodes were used the combustion of considerable of the carbon and silicon of the iron gave white iron as a result.

Success was reached by using gray iron electrodes sufficiently high in silicon, and by incorporating carbon in the added metal so as to compensate for that burned away during fusion of the electrode in the arc. This taking up of carbon is possible because the cast iron remains liquid long enough and also during this period of fusion it is subjected to a kind of intense stirring which comes probably from gas evolution. The carbon added in the form of graphite or charcoal easily dissolves in the deposited metal because of this stirring action and the metal is again changed to gray iron.

Different methods may be worked out for insuring a regular addition of carbon to the deposited molten metal. The most simple in practice is to surround the cast iron electrode with a covering containing a large percentage of graphite or charcoal, and of convenient thickness. The rods may be provided with a groove containing the needed carbon; they may be hollow, or a mechanical method of adding the carbon may be arranged. The principle is to replace the carbon burned out by the arc.

In the original article three photomicrographs are

given of metal deposited according to this process. They show cast iron with plenty of graphite and very little free cementite, which would indicate that the metal would machine easily. This is borne out in practice. The metal has a much finer grain than that of ordinary cast iron while still preserving the same ease of working and strength. Analysis gives the following results:

	Ordinary Cast Iron, Per Cent	Metal Deposited by the Arc, Per Cent
Combined carbon.....	0.38	0.20
Graphitic carbon.....	2.80	2.00
Total carbon.....	3.18	2.20
Manganese.....	0.66	0.85
Phosphorus.....	1.27	1.76
Sulphur.....	0.05	0.058
Silicon.....	2.21	4.04

Neither blowholes nor hard spots are found in the weld. Before welding, the pieces to be welded should be heated or else the first part of the deposited metal solidifies too rapidly to have time to take up carbon, and the fusion zone shows white iron and undissolved carbon, which gives a poor weld. The temperature of preheating should be at least 1300 deg. Fahr. G. B. W.

The Peebles Mfg. Co., Newton Falls, Ohio, has awarded a contract for two additional factory buildings, one 100 x 100 ft. and the other 40 x 480 ft. The outer walls are to be of corrugated iron and the interior wall of wood. It is necessary to build structures of this kind, instead of brick, in order that they may be completed in time to house additional machinery which has been ordered. The company manufactures railroad cranes.

A gold medal for its chucks was awarded to the Union Mfg. Co., New Britain, Conn., by the Brazilian Centennial Exposition at Rio de Janeiro.

Iron and Steel Exports Decline Sharply

Imports for June Also Are Less—Movement of Pig Iron to United States for Fiscal Year Amounted to 655,286 Tons—Efforts to Increase Exports Expected

WASHINGTON, July 31.—Iron and steel exports in June, 1923, totaled 171,183 tons, valued at \$21,242,193, reflecting a sharp decrease of 32,206 tons under May, while imports of iron and steel in June amounted to

\$443,645 in value as compared with 7697 valued at \$478,456 in May.

One of the striking comparisons of the import and export figures for the fiscal year ending with June, 1923, is the approach in volume of the former to the latter. The total imports of 1,111,929 tons, valued at \$39,101,367, is only 704,397 tons under the total

Exports of Iron and Steel
(Gross Tons)

	June		Twelve Months Ended June	
	1922	1923	1922	1923
Pig iron	1,996	2,960	28,330	31,891
Ferromanganese	55	200	1,021	3,638
Ferrosilicon	58	45	463	931
Scrap	8,739	4,372	60,875	40,074
Ingots, blooms, billets, sheet bar, skelp	13,178	9,652	63,127	113,377
Iron and steel bars	19,084	15,669	102,190	166,862
Alloy steel bars*	229	280	4,673	2,694
Wire rods	3,565	2,626	41,123	24,380
Plates, iron and steel	9,844	11,177	119,851	109,124
Sheets, galvanized	10,628	10,664	82,172	112,744
Sheets, black steel	23,823	9,995	299,328	101,306
Sheets, black iron	721	2,214	6,639	12,654
Hoops, bands, strip steel	3,032	2,787	25,033	38,312
Tin plate, terne plate, etc.	8,160	6,966	78,551	83,434
Structural shapes, plain material	6,023	12,141	113,224	112,114
Structural material, fabricated	2,380	5,807	23,281	86,724
Steel rails	43,672	18,937	240,162	240,477
Rail fastenings, switches, frogs, etc.	5,378	2,964	23,962	37,991
Boiler tubes, welded pipe and fittings	18,718	17,940	161,857	170,845
Cast iron pipe and fittings	1,686	1,781	26,377	44,695
Plain wire	11,283	11,182	83,840	94,684
Barbed wire and woven wire fencing	8,825	8,854	42,363	83,290
Wire cloth and screening*	170	125	622	1,579
Wire rope and cable*	333	779	2,312	6,086
Wire nails	4,675	4,525	51,286	34,829
All other nails and tacks	913	705	7,126	8,458
Horseshoes	50	168	703	1,109
Bolts, nuts, rivets and washers, except track	1,868	2,094	14,620	18,858
Car wheels and axles†	1,986	1,833	8,178	17,274
Iron castings†	729	934	5,233	9,984
Steel castings†	97	590	1,249	3,353
Forgings†	387	217	1,262	2,558
Machine screws†	10	.....	85	.....
Total	212,295	171,183	1,721,418	1,816,329

*Not reported separately, prior to January, 1922.

†Previous to January, 1922, reported by value only.

Imports of Iron and Steel into the United States
(In Gross Tons)

	June		Twelve Months Ended June	
	1922	1923	1922	1923
Pig iron	5,850	30,033	40,472	655,286
Ferromanganese	13,535	11,786	30,799	114,187
Ferrosilicon	1,518	1,008	11,011	17,937
Scrap	10,000	15,717	50,969	226,502
Steel ingots, blooms, billets, slabs and steel bars	1,089	736	17,478	25,511
Rolls and splice bars	6,586	4,244	29,105	24,791
Structural shapes	154	720	1,525	10,696
Boiler and other plates* .....	.....	119	.....	1,623
Sheets and saw plates	29	104	334	1,087
Bar iron	268	1,365	2,919	10,991
Tubular products* .....	.....	285	.....	3,284
Castings and forgings* .....	.....	385	.....	1,814
Nails and screws* .....	.....	198	.....	924
Tinplate	64	124	356	9,976
Bolts, nuts, rivets and washers* .....	.....	7	.....	171
Wire rods	62	502	1,218	2,983
Round iron and steel wire* .....	.....	554	.....	2,885
Flat wire and strip steel* .....	.....	83	.....	812
Wire rope and insulated wire, all kinds* .....	.....	49	.....	469
Total	39,155	68,019	186,186	1,111,929
Manganese ore	44,329	36,138	257,208	306,610
Iron ore	133,817	277,380	264,318	2,255,951
Magnesite	7,662	11,490	76,712	125,774

*Not reported separately previous to Sept. 22, 1922.

exports for the same period, which amounted to 1,816,329 tons, valued at \$199,848,561. This unusual situation of a comparatively small difference from a point of tonnage between imports and exports is, of course, especially due to the unprecedented movement

68,019 tons, valued at \$2,597,159, a decrease of 7866 tons from the preceding month. Exports of machinery in June were valued at \$23,631,349, an increase of \$205,907 over May. Imports of machinery were valued at \$911,901, as against \$1,378,275 in May. Exports of machine tools in June totaled 7567 in number and

Imports of Machinery
Value

	June, 1922	June, 1923	12 Months Ended June, 1922	June, 1923
Metal-working machine tools and parts	\$21,255	\$16,814	\$194,546	\$357,307
Agricultural machinery and implements	230,255	295,426	1,738,394	2,808,714
Electrical machinery and apparatus* .....	.....	20,584	.....	400,958
Other power generating machinery* .....	.....	45,755	.....	1,901,514
Other machinery	200,016	199,731	3,181,653	2,526,368
Vehicles, except agricultural	92,619	333,591	1,628,832	2,307,147
Total	\$544,145	\$911,901	\$6,743,425	\$10,302,008

*Not reported previous to Sept. 22, 1922.

Machine Tool Exports

	May, 1923		June, 1923	
	Quantity	Value	Quantity	Value
Lathes	67	\$57,138	64	\$96,385
Boring and drilling machines	135	42,106	307	44,710
Planers, shapers and slotters	8	17,256	17	26,855
Bending and power presses	24	27,038	21	10,703
Gear cutters	9	17,787	89	9,971
Milling machines	22	24,914	29	34,830
Thread-cutting and screw machines	84	71,476	54	36,384
Punching and shearing machines	30	14,167	300	14,890
Power hammers	18	8,150	9	7,158
Rolling machines	3	3,000	2	485
Sharpening and grinding machines	3,767	112,779	1,824	72,034
Chucks, centering, lathe, drill and other metal-working tools	2,435	27,080	3,818	24,344
Pneumatic portable tools	1,095	55,565	1,033	64,896
Totals	7,697	\$478,456	7,567	\$443,645

of incoming shipments of pig iron, and in a lesser degree to the heavy imports of scrap. Pig iron imports alone amounted to 655,286 tons during the fiscal year, or considerably more than one-half of the total imports, while imports of scrap amounted to 226,502 tons. The large imports for the fiscal year 1923 are also emphasized when compared with those for the corresponding period of 1922 with a total of only 186,186 tons, valued at \$17,875,143.

Iron and Steel Exports by Countries
(Gross Tons)

12 Months June, Ended 1923 June, 1923		12 Months June, Ended 1923 June, 1923	
Plates:		Tin Plate:	
Canada	10,082 87,921	Canada	2,942 25,105
S. America ..	202 1,212	Japan	1,862 24,653
Japan	85 1,721	China	642 5,671
Australia ..		Argentina ..	343 4,232
(Less than ½ ton)	3,209	Cuba	314 3,258
China	2,858	Italy	11 2,779
Galvanized Sheets:		Steel Rails:	
Canada	4,632 35,068	Cuba	6,906 42,245
Cuba	1,271 9,679	Kwantung ..	5,742 9,183
Philippine ..		Canada	2,275 28,970
Islands ..	730 10,163	Japan	484 87,579
Australia ..	708 2,678	Honduras ..	2 9,495
Argentina ..	432 5,706	Chosen	11,679
Mexico	356 5,867	Galvanized Wire:	
Japan	279 3,994	Argentina ..	3,305 19,422
Central		Brazil	1,693 8,452
America ..	254 3,961	Japan	1,617 14,372
Colombia ..	196 4,929	Canada	1,406 16,720
China	194 2,012	Chile	480 6,199
Dutch East ..		Australia ..	367 9,867
Indies	136 1,142	Barbed Wire:	
Black Steel Sheets:		West Indies ..	1,779 10,719
Canada	4,917 55,494	Argentina ..	1,479 12,958
Japan	3,368 33,148	Brazil	1,099 13,810
Argentina ..	38 3,892	Canada	451 6,227
		Australia ..	324 8,549
		Colombia ..	258 5,480

Exports for the fiscal year 1922 were 1,721,418 tons, valued at \$181,377,620, a decrease of 94,911 tons under exports for the fiscal year 1923. The latter, however, showed a decrease of 69,968 tons under exports for the calendar year 1922.

Declines were shown in exports in June under May in most of the important items and were particularly

Pig Iron and Scrap Imports by Countries
(Gross Tons)

June, 1923		Twelve Months Ended June, 1923	
Pig Iron:			
England	16,050	297,967	
Canada	6,505	50,216	
British India ..	4,678	8,702	
Scotland	2,100	112,014	
China	550	1,252	
Germany	150	22,734	
Belgium		58,707	
France		95,894	
Sweden		863	
Netherlands ..		2,537	
Austria		299	
Cuba		4,100	
Scrap:			
Canada	8,735	161,131	
Cuba	5,270	36,963	
England	645	13,295	
Scotland	640	2,767	
Mexico	195	500	
Panama	132	5,361	
Sweden	47	263	
Dutch Guiana ..	24	24	

marked in the case of steel rails, the largest item of export in June, with a total of only 18,937 tons, as against 30,847 tons in May. The falling off in exports of this item as well as in some of the other prominent products such as black steel sheets is attributed partly to the decreased purchases by Japan. Japan was by far the largest foreign buyer of steel rails for the fiscal year, taking 87,579 tons, while Cuba ranked second, taking 42,245 tons. Canada, which again is the principal market of exports of American iron and steel, led as the principal buyer for the fiscal year of plates, galvanized sheets, black steel sheets, and tin plate. In the last named product, however, Japan was a close second.

The belief prevails here that American iron and

steel manufacturers will make an earnest attempt to increase exports during the last six months of 1923, and will find it possible to intensify their effort because it is understood that they are in a better position both to meet prices of European competitors and to take on added bookings for foreign delivery. It is recognized that some foreign makers are quoting prices which it is difficult, if not impossible, for American

Machinery Exports

By Value

	June, 1922	June, 1923	Twelve Months Ended June, 1922	June, 1923
Locomotives	\$783,170	\$358,963	\$18,133,922	\$5,307,075
Other Steam Engines	298,401	40,064	1,341,900	1,736,764
Boilers	150,394	75,807	1,803,169	1,217,845
Accessories and Parts	53,982	107,868	536,018	1,070,436
Automobile Engines	831,401	433,432	3,955,569	5,356,866
Other Internal Combustion Engines	638,994	877,228	4,170,844	3,742,445
Accessories and Parts for	225,582	337,963	1,342,353	3,013,225
Electric Locomotives	79,339	149,065	*1,506,742	2,968,348
Other Electric Machinery and Apparatus	753,643	613,208	15,569,853	6,941,472
Excavating Machinery	103,802	85,798	*710,339	1,441,367
Concrete Mixers	32,243	46,628	398,179	578,412
Road Making Machinery	20,364	85,458	414,539	625,941
Elevators and Elevator Machinery	297,170	345,713	*1,950,928	4,565,775
Mining and Quarrying Machinery	568,726	970,837	5,358,265	7,900,716
Oil Well Machinery	580,837	451,946	*2,273,191	4,844,141
Pumps	490,373	744,299	5,562,792	6,824,209
Lathes	84,198	96,385	*1,045,177	738,667
Boring and Drilling Machines	68,580	44,710	*336,669	592,377
Planers, Shapers and Slotters	52,220	26,855	*147,920	245,993
Bending and Power Presses	31,531	10,703	*239,290	170,882
Gear Cutters	15,937	9,971	*36,067	152,783
Milling Machines	51,622	34,890	*158,645	442,150
Thread Cutting and Screw Machines	17,290	36,384	*86,835	365,773
Punching and Shearing Machines	20,685	14,890	*86,549	138,590
Power Hammers	3,162	7,158	*55,706	137,304
Rolling Machines	585	485	*24,504	148,590
Sharpening and Grinding Machines	60,207	72,084	832,708	916,949
Other Metal Working Machinery and Parts of	823,953	370,627	6,097,929	5,420,874
Textile Machinery	1,385,904	830,648	17,469,311	9,648,832
Sewing Machines	691,151	828,927	5,727,923	8,481,877
Shoe Machinery	81,981	215,944	997,475	1,317,748
Flour-Mill and Gristmill Machinery	80,650	84,617	1,036,997	1,056,590
Sugar-Mill Machinery	494,532	267,535	4,392,260	3,711,807
Paper and Pulp Mill Machinery	109,022	147,194	2,466,299	1,990,852
Sawmill Machinery	23,418	23,406	870,287	556,388
Other Woodworking Machinery	109,570	88,493	1,092,783	1,422,044
Refrigerating and Ice Making Machinery	196,123	172,849	1,866,823	2,047,170
Air Compressors	245,555	187,005	1,995,381	2,456,324
Typewriters	1,012,665	1,275,471	10,396,381	12,873,512
Power Laundry Machinery	41,899	81,661	532,708	967,267
Typesetting Machines	360,527	233,729	3,410,701	3,527,947
Printing Presses	227,293	373,961	4,694,510	4,232,707
Agricultural Machinery and Implements	1,962,834	4,202,292	20,406,213	37,378,456
All Other Machinery and Parts	9,408,885	8,169,314	94,231,993	97,020,067
Total	\$23,556,199	\$23,631,349	\$246,114,675	\$256,315,553

*January 1 to June 30, 1922.

manufacturers to meet. At the same time, the instability of foreign currencies and the depreciation which they suffer cause the foreign maker to meet a hard problem in importing raw materials, such as the American manufacturer does not face.

Hope is also entertained that the Ruhr and other European disturbances will give way to more settled

Imports of Manganese Ore by Countries of Origin
(In Gross Tons)

	June, 1923		June, 1923
Brazil	23,945	Turkey in Europe..	2,151
Russia	4,005	Germany	33
British West Africa ..	3,498	Java	6
British India	2,500		

conditions in the near future, and consequently provide better markets abroad.

Decreases made in imports in June of the present year related most particularly to pig iron, with a total of 30,033 tons and scrap with a total of 15,717 tons. The most important increases were in ferro-manganese with a total of 11,786 tons, and rails, with a total of 4244 tons. There was a close balance between imports and exports of iron bars in June, the

Imports of Iron Ore by Countries
(Gross Tons)

	June, 1922	June, 1923	12 Months Ended June, 1922	June, 1923
Sweden	49,722	77,641	90,129	648,820
Cuba	45,047	66,000	103,394	638,300
Spain		21,984	21,580	158,842
Canada	347	11,100	4,182	15,424
Other countries ..	38,701	100,655	45,033	794,565

former being 1365 tons and the latter being 1191 tons.

Of the total imports of pig iron for the fiscal year ending with June, 1923, England was the leading country of origin, providing 297,967 tons, while Scotland

Imports of Iron and Steel in Gross Tons
(Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
1909 to 1913, incl.....	26,505	14,132	.....	.....
1914 to 1918, incl.....	23,351	4,645	3,281	147,155
1919 to 1921, incl.....	23,901	5,708	3,710	37,115
1922	59,545	31,954	9,117	31,204
January, 1923	120,078	83,935	5,120	829
February	67,704	35,793	9,234	4,636
March	106,197	72,344	9,030	12,799
April	77,903	36,371	7,221	14,071
May	75,885	39,764	10,482	12,734
June	68,019	30,033	12,794	36,138
Six months' average....	85,964	49,706	8,980	13,535

*Not included in "total imports."

†Includes ferroalloys.

‡Average for three years, 1916 to 1918, only.

came second with 112,014 tons, and France was third with 95,894 tons. Canada was the chief country of origin of scrap imports, having provided 161,131 tons during the fiscal year.

Sweden led as the source of origin of iron ore imports, the incoming shipments of that product for

Exports, January, 1922, to June, 1923, Inclusive

	(Gross Tons)	All Iron and Steel	Pig Semi-finished Iron	Material
*Average, 1912 to 1914....	2,406,218	221,582	145,720	.....
*Average, 1915 to 1918....	5,295,333	438,462	1,468,026	.....
Calendar year 1919.....	4,239,837	309,682	258,907	.....
Fiscal year 1920.....	4,212,732	248,126	288,766	.....
Calendar year 1920.....	4,961,851	217,958	216,873	.....
Fiscal year 1921.....	4,168,619	129,541	82,549	.....
Calendar year 1921.....	2,213,042	28,305	10,363	.....
January, 1922	160,920	1,043	4,683	.....
February	133,975	1,430	6,627	.....
March	208,843	2,724	10,002	.....
April	198,830	2,750	9,376	.....
May	230,062	3,897	13,091	.....
June	212,295	1,996	13,178	.....
Fiscal year 1922.....	1,721,418	28,330	63,127	.....
July	157,169	1,943	10,149	.....
August	145,640	1,791	9,353	.....
September	129,475	5,203	6,810	.....
October	132,924	1,553	8,364	.....
November	127,782	3,464	7,157	.....
December	150,170	3,136	8,449	.....
Calendar year 1922.....	1,986,297	30,922	107,201	.....
January, 1923	123,190	2,482	10,563	.....
February	133,902	2,786	7,733	.....
March	163,920	2,881	11,416	.....
April	177,471	1,844	11,247	.....
May	203,389	1,848	12,824	.....
June	171,183	2,960	9,652	.....
Fiscal year 1923.....	1,816,329	31,891	113,377	.....

*Calendar years.

the fiscal year being 648,820 tons and Cuba ranked a close second, providing 638,300 tons. Of the imports of ferromanganese in June, 11,745 tons came from England, 39 tons from France and two tons from Germany.

The American Society of Mechanical Engineers will hold a regional meeting at Chattanooga, Tenn., on Oct. 23 and 24. The program is expected to include three sessions, one on hydroelectric power, one on management and one on welding. E. C. Patterson, general manager, Chattanooga Boiler & Tank Co., Chattanooga, has been appointed to have charge of the details of the meeting.

The Open Shop Association of San Antonio, Tex., is conducting a trade school for bricklayers and plasterers. The first class of plasterers is now out on jobs, rendering good service, and the second class will be out in four weeks. The first class of bricklayers will complete its course within the next eight weeks.

BETHLEHEM EARNINGS

First Quarterly Statement Issued—President Grace Gives Views on Business Conditions

President Eugene G. Grace of the Bethlehem Steel Corporation made public last Thursday the first quarterly earnings statement issued by the company and announced that the policy will be continued. The usual quarterly dividend of 1¼ per cent was declared on common stock. Earnings for the period ended June 30 and inclusive of Midvale properties totaled in net \$11,601,682. The necessary deductions reduced this figure to \$5,426,471 net income. After the dividend on preferred, there remained \$2.40 per share available on the \$180,000,000 of common stock outstanding, and surplus for the period, after these disbursements, was \$2,102,262. There are now 51,000 Bethlehem stockholders. The detailed statement follows:

Total net earnings.....	\$11,601,682
Less interest charges, including proportion of discount on and expense of bond and note issues	3,245,082
Balance	\$8,356,600
Less provision for depreciation, obsolescence and depletion	\$2,930,129
Net income	\$5,426,471
Less dividends .....	.....
Preferred	\$1,079,851
Common (1¼%)	2,244,358
	\$3,324,209
Surplus for the quarter.....	\$2,102,262

Demand for steel products holds well considering the time of the year, Mr. Grace said, and there are unmistakable signs of increased activity. No important cancellations or delayed deliveries have been requested and prices are holding firm. Comparisons of earnings with the preceding quarter and the corresponding quarter of 1922 are impossible, because all the details of the mergers had not been arranged in time to be included in the earlier statements.

By the nature of the company's business, which is in large measure contractual, it is difficult to estimate the amount of business ahead on a tonnage basis. Represented in dollars, the orders on hand amount to \$80,066,000, comparing with \$67,510,007 at the close of 1922 and \$50,164,618 at the close of 1921. Mr. Grace said that the value of orders on the books at the close of each quarter also will be given in the future in connection with the earnings statement. Operating schedules are at approximately 80 per cent of capacity and will remain at this level through August, as indicated by orders pending.

Mr. Grace said that nearly all of Bethlehem 7 per cent non-cumulative preferred stock has been exchanged for the new 7 per cent cumulative preferred and between \$11,000,000 and \$12,000,000 of the \$30,000,000 8 per cent preferred also has been converted. Between 85 and 90 per cent of the total stock of the Midvale Steel & Ordnance Co. has been exchanged for Bethlehem common. About 2400 shares of Cambria Steel stock out of a total of 900,000 shares remain unconverted.

The head of the Bethlehem company intimated that minority holders of Cambria stock, who have not accepted Bethlehem's offer of \$181 a share for their holdings, probably will have to take the original price agreed upon with the Midvale management.

The Navy Department last week disposed of practically all surplus material and equipment located at the Charlestown Navy Yard, Boston, and the Squantum, Quincy, Mass., plant, erected during the war for the Bethlehem Shipbuilding Corporation, Ltd., Fore River Works. Large lots of brass, copper, steel, chain, valves, fittings, tools, steam launch engines, optical, marine and radio supplies and various other materials were disposed of at fairly representative market values. The Government plans to abandon the Squantum plant.

Machine Shop Reorganized while Operating

Congestion Relieved Without Interfering with Production—
Shop Procedure Systematized and Production Control Introduced—Methods Outlined

BY CARLOS DE LAFFRA*

INTERESTING problems were presented in the reorganization, under the direction of the writer, of a large machine shop running at full capacity, and without interfering with production during the transformation.

The shop had become greatly congested and contracts on hand were subject to considerable delays at times because of the inability of the machine shop to function properly in advance of requirements. This situation was the inevitable outcome of certain post-war conditions which had not yet been remedied. Executive incompetency and procrastination advanced the inevitable day to such time that, through sheer necessity, it became imperative that something drastic be done to clear the plant of the congestion and place the machine shop on a footing to cope with the work in a systematic and orderly procedure and in accordance with the importance or priority of the work to be done under the several contracts active at the time.

The machine-shop group, consisting of machine shop, blacksmith shop and pipe shop, were all virtually under one roof, the building being about 500 ft. long and 250 ft. wide. About 350 mechanics were employed and the equipment ranged from small automatic machines to large lathes and boring mills, steam hammers, etc. The machine shop, to which we will confine our attention, had become so congested that it was difficult to move about between machine tools without walking upon the mass of unfinished and finished materials on the floor around the tools and in the passageways. Getting things done in a hurry was the order of the day, with the result that regulations, conceived with all good intent, were made the exception until eventually all jobs became rush orders. Like the cry of "wolf! wolf!" rush orders became so commonplace that ultimately delays accumulated to the breaking point in shop management. Finally the writer was asked to straighten out the mess and, if possible, without interfering with production.

Method of Attack Decided Upon

It was suggested that an inventory, taken over night, might afford an accounting of materials in the shop, but upon examination of the plant it was quite evident that nothing short of a thorough house-cleaning would accomplish the desired result. It was either that or let bad-enough alone. It was then Thursday noon and the inventory was desired by the next morning, so that the executives could decide what further steps to take and start the new method at the beginning of the

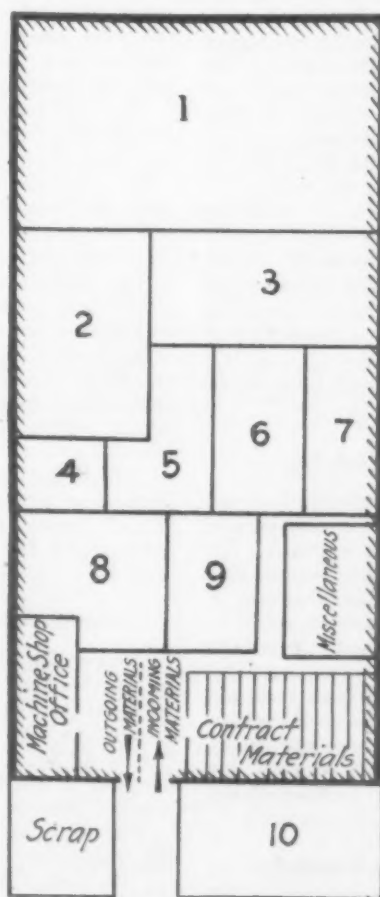
following week. While that was not an impossibility, it was evident that such a course would mean a waste of time and money, because such an inventory would not eliminate the cause of the congestion, would be worthless within an hour or two after completion, and the situation would be no better, but possibly even worse, afterward. It was therefore suggested that, in lieu of a mere inventory, the writer be given full responsibility and *carte blanche* to clean out the machine-shop group, systematize the procedure, introduce a

system of production control, as well as to inventory all materials in the group. It was proposed to begin taking inventory and cleaning up the shop Saturday noon after the men had quit work for the week-end, and complete the job before the men returned Monday morning, so there would be no loss of working time and no confusion. This intermission between Thursday and Saturday noon was used in preliminary work, such as formulating the method of attack, organizing the clerical and labor force necessary, so that the job could be done quickly and with the least confusion and least effort.

On the face of it, the task appeared to be Herculean, but after all it became merely a case of dividing the work into as many groups as could complete their elementary assignments within the allotted time. Accordingly the machine shop and outside storage yard were chalked off into ten sections, as shown at left, the sections being as nearly equal as possible as regards the work to be done within them. In addition, two large sections of floor space were cleared of everything. One of these, marked "miscellaneous" on the figure, was reserved for unidentified materials, and the other section was subdivided and marked with the numbers of the contracts then active in the shop. It will be noted that this division of the shop was not equal as to area, large machine tools and materials requiring

a larger area than the small automatics for the same clerical effort on inventory and assortment.

Around each machine tool were several piles of castings or partly finished materials yet to be worked on by the adjacent tool. While job tags identified most of these piles, others were totally lacking in identification due to the natural tendency of the machinist to handle the tagged piece first, remove the tag and place it "somewhere" around the machine and then forget to replace it until the last piece in the lot was finished. By this time, several hours or days later, the tag had been lost. The work-benches also, and other catch-all places were filled to overflowing with spoiled, defective or excess materials. In addition to these conditions there existed a laxity of management that permitted mechanics from the other departments to enter the machine shop and remove whatever they found that was required on their job, even though not specifically



For Taking Inventory and Cleaning Up, the Shop Was Chalked Off As Shown

*Consulting engineer; instructor in engineering New York University, New York.

assigned to their particular job. The effect of all this upon any attempt to maintain dependable shop records can only be lightly imagined.

Ten Squads of Two Men Each Take Inventory

In the work of reorganization ten squads of two picked men each were employed, one of each squad being a technical man who could readily identify the anatomical relation of the materials and work in progress to the machines produced in the shop. The other member was a clerk, whose duty it was to chalk off each piece as called by the first member and enter it on a special inventory blank. These squads were first given thorough and specific directions regarding their work, as was another group of four remaining in the office to compile the inventory sheets as rapidly as filled and dispatched by runner to them. A gang of six laborers was also detailed to remove or shift materials as occasion required.

The squads took possession of their allotted spaces at one o'clock Saturday afternoon. The procedure was as follows: Each piece of material was marked after the section number, contract number or shop number, for example, 3-361-270M, meaning it came from section 3, was intended for contract No. 361 and its shop or part number was 270M. It was, after proper entry on the inventory sheet, removed to section 361 reserved for all materials intended for that contract. Parts lacking identification were marked merely with the section number from which they were removed and were placed in the "miscellaneous" section for future reference.

A section outside of the shop door was set aside for scrap, which consisted of items obviously of no further use as far as the machine shop was concerned. These were subsequently to be delivered to the reclamation department. As fast as the inventory sheets came in the clerks in the office were trying to complete the identification of each item by comparison with the master sheets, making such notation on each as would facilitate subsequent identification.

Only One Job Left at Each Machine

The various groups completed their respective assignments between 2 and 4 p. m. Sunday, having worked throughout the night, stopping only for meals. All materials had been removed from the machine-tools and benches to their allotted sections with the exception of one job at each machine for the men to work on upon their return Monday morning. Three tons of miscellaneous scrap materials, mostly small castings and fittings averaging about 3 lb. each, had been removed to the scrap heap for reclamation, while a considerable excess stock of usable materials, such as bar stock, valves, fittings, etc., were returned to "stores" for credit and reissue to subsequent jobs. The floor of the machine shop was now plainly visible and clean.

Method of Handling Shop Orders Changed

Orders were at once issued excluding from the machine shop all mechanics from other departments. Any requirements were to be filled only by application to the production division clerk placed in the shop as later explained. It had been the custom to issue shop orders in multiple, one copy for each shop or department effected or interested. Each shop was characterized by a distinctive color. Under the filing system used in the so-called production division each color was filed separately and in numerical order. Thus, an order involving seven departments was issued under seven colors, which required seven filing operations, one for each color. If it was desired to ascertain the history of any order it necessitated searching through as many files as there were departments or colors involved. The idea in the adoption of this system was that it grouped together all the orders of any one department, but in actual practice the history of the department was inconsequential to that of the progress of orders. Therefore the files were changed so that each order was filed according to its number only, which brought together under one clip all the departments or colors. Thus the filing labor was reduced to a minimum and likewise the

chances of error. Time for finding the complete history of an order was also greatly reduced. Orders awaiting execution, orders being worked on and completed orders were segregated under the new procedure so that the errors incidental to filing and time required for locating were correspondingly reduced and inactive or "dead" orders kept out of the "active" files.

Equipment vs. Personnel

As to equipment, the plant in question was one of the most modern of its kind. Here, however, as in many similar cases, modern equipment was put into the hands of personnel incompetent to exact from these advantages an accounting worthy of their hire. The large outlay for fine shop buildings, the best tools, and the best planning and production methods went for naught because the personnel responsible for its efficient maintenance was but of mediocre or antiquated quality. High quality personnel will produce far better results with less equipment and get results with less confusion in an old-fashioned shop than incompetent and inefficient personnel will in the most modernly designed and equipped plant. Why executives do not select their subordinates with the same care and demand the same effective return per dollar spent for personal service that they do for machine service is puzzling, yet it is frequently done.

To have resystematized the machine shop procedure would have been time and money wasted had not the personnel responsible for its subsequent maintenance been also reorganized. From previous observation as head of the statistical department the writer knew the relative merits of the clerks in the production division, who were in charge of this particular phase of the work. Therefore little experimenting with the personnel was necessary. The clerks were shifted in their respective jobs according to their previously demonstrated abilities and then set to work according to standard practice instructions, which were put into typewritten form and covered the whole procedure in detail. Each clerk learned that he had a particular job, that there was a distinct point in the cycle of events at which his work started and ended and that also there was a definite time for the completion of the allotted tasks. Overlapping of efforts and consequent opportunity for passing up responsibility were eliminated.

Shop Orders Delivered With the Material

Under the old system shop orders were dispatched to the shops as soon as issued, irrespective of whether required materials were ordered or on hand or not. Under the new system the production division controlled all orders until the materials were delivered to the shop in question. Then the order, with the materials checked thereon, was turned over to the shop foreman in exchange for his signature, as receipt for same, in the production record book.

All materials into and out of the machine shop passed through the main entrance only, and were checked both ways by the production checker stationed at the door, who required a receipt for all materials delivered to the shop and who gave a receipt for all materials leaving the shop. As soon as all materials required to work on an order were on hand the shop order was delivered with the materials to the shop foreman when next he required a job for a given machine. Proper regard was paid to the priority of orders.

Numerous other details had to be worked out. The success of the reorganization was due to a carefully prepared schedule, a proper balance of task with ability and a logically prepared procedure, the whole so worked out "in black-and-white" that each clerk knew definitely what was expected of him and of his associates. Incidentally the clerical force was reduced in numbers. The shop foreman, his assistants and the workmen, although dubious at first, gave their cooperation toward a fair trial of the new procedure and also their indorsement when they realized that the new system afforded them better shop conditions, placed responsibility where it belonged, and contributed toward greater output.

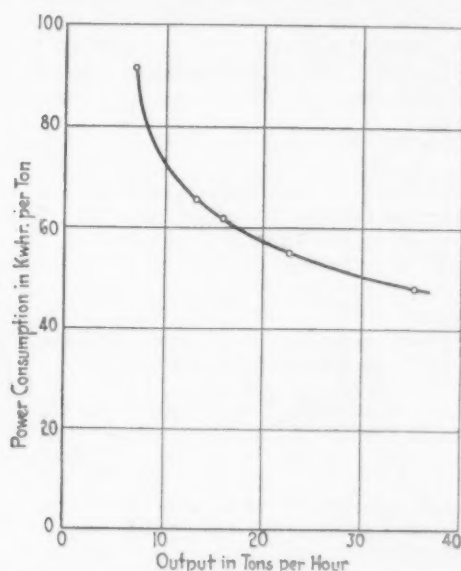
POWER FOR ROLLING MILLS*

Economic Principles Governing the Use of Electrical Power in Iron and Steel Works

BY C. A. ABLETT

IN considering whether it will prove economical to drive rolling mills electrically or not, careful consideration must be given to the effect of the demand for power required by the different methods of driving. As the mill drive is part of the works power equipment, whatever method of drive is selected cannot be treated separately from the power station plant or power company's tariff, as the case may be, both of which are affected in greater or less degree by each of the alternative systems of driving that would come under consideration. It will be readily recognized that if they are dissociated the result will almost certainly be increased capital expenditure.

It is known that electrically driven rolling mills rolling the same type of section, under generally similar conditions of output, temperature and size of billet,



Reduction in Unit Power Consumption as Output of the Mill Increases. Rolling 21-lb. I-beams from $7\frac{1}{4} \times 7\frac{1}{4}$ -in. billets

show great variations in the quantity of power consumed, expressed in kw/hr. per ton rolled. Consequently there exist marked differences in the working costs of such mills, where one might expect that the working costs would be approximately the same. The existence of such differences has been too readily accepted by engineers, and insufficient attempts have been made to ascertain the cause, with a view to the reduction of the working costs to the lowest obtainable. Examples of these differences are shown by the following figures:

	Kw/hr. per Ton Rolling I-Beams	
	Weighting 18 lb. per Foot Run	Weighting 12 lb. per Foot Run
Mill A.....	38.7	47.2
Mill B.....	58.0	62.5
Mill C.....	53.5	72.9

Cases of high power costs may be attributable to:
 Improper drafting of rolls;
 Improper selection of drive;
 Improper selection of motor;
 Billets not properly heated;

Improper selection of system of power supply to suit local conditions;

Gradual introduction of mixed power plants, due to not adhering to the original program; and

Lack of proper records.

Electrical driving gives ample facilities for detecting and remedying cases of high power costs arising from high power consumption due to roll drafting, which is unsuitable from the point of view of power

costs. But little has been done in this direction, and no information is generally available regarding the principles to be observed in drafting to obtain low costs.

In the selection of drive and motor to obtain the cheapest power consumption, the principle to be acted on is that of keeping all losses, electrical or mechanical, to an absolute minimum. To attain this, however, embraces a great deal of detail engineering work. It is usually found, however, that the plant arrangement to attain minimum losses entails increased capital costs, and therefore to obtain the best all-around result, i.e., the lowest combined capital and power costs, complete balance sheets must be prepared to represent the different conditions under which the mill has to work, after consideration of the proposed rolling program and the manner in which this rolling program may develop in the future. It then becomes a matter of judgment to select the type of plant to give the best all-around economy under these varying conditions.

Generally speaking, greater differences in power consumption are to be found in mills where the product rolled is of such a character as to require a greater fluctuating power than in those where the power taken remains more constant. Consequently the former types of mills are those in which the possible economy is frequently not attained.

Where a mill is rolling less than the full output, the power consumption in kilowatts per ton is greater than if it were rolling its full output, as is illustrated by the following figures:

Rolling I-Beams Weighing 21 Lb. per Foot from Billets $7\frac{1}{4} \times 7\frac{1}{4}$ In.		
Output, Tons per Hour		Power Consumption, Kw/hr. per Ton
7.2		91.5
13.2		65.0
16.0		62.0
22.7		55.0
35.5		48.0

The figures in both tables are quoted solely for comparative purposes, and are not intended as examples of ideal power consumption.

American Copper Industry in 1922

Final figures for the output of the copper industry of the United States for 1922 have just been issued by the Department of the Interior as compiled by H. A. J. Jenison of the Geological Survey. Preliminary figures were published in THE IRON AGE of Jan. 18.

The total production in 1922 of new refined copper from both domestic and foreign sources was 1,358,659,101 lb. as compared with 1,020,027,096 lb. Of the 1922 output 1,215,729,655 lb. was electrolytic copper, with 122,545,126 lb. Lake copper, and the remainder classed as casting copper. The total output of secondary copper was 146,010,542 lb., which was in addition to the foregoing figures.

Returns from all producing companies show that their stocks of electrolytic, lake, casting and pig copper on hand and in process of refining at the beginning of this year was 216,000,000 lb. of refined copper and 361,000,000 lb. of blister copper and material in process of refining. The corresponding figures for 1922 were 459,000,000 lb., and 283,000,000 lb. respectively.

The amount of copper withdrawn for domestic consumption in 1922 was 896,633,833 lb. as compared with 610,988,744 lb.

Exports of refined copper in ingots, bars, rods or other forms is returned as 652,666,939 lb. in 1922 as against 596,117,247 lb. in 1921. Total exports of copper in all forms, including refined copper, were 743,039,888 lb. in 1922 as compared with 628,804,750 lb. in 1921.

The Endicott-Johnson Shoe Corporation, Binghamton, N. Y., during the first week in July spent \$615,000 for vacations for its 14,000 employees. It was first planned to scatter the vacations throughout the year, but this, it was found, would keep the various departments short handed. Orders were then issued to close all the plants on July 1 for one week. Each man was handed a week's pay in advance and told to have a good time.

*Abstract taken from a paper presented before the British Iron and Steel Institute at the 1923 annual meeting.

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The railroads and the iron and steel and other industrial interests were particularly vigorous in urging a reopening of the case, while many prominent coal producers expressed strong opposition to its reopening. Among the latter was the Pennsylvania Coal Producers' Association. In an answer filed with the commission, this association asserted that the general public would be greatly benefited by application of the decision. It denied that discard of the assigned car rules will bring an increase to the public amounting to \$100,000,000 annually. It was contended that the result of the decision will be a healthy competitive situation in place of a feverish effort on the part of consumers to obtain coal regardless of cost.

Steel Corporation Argument

Among other reasons assigned by Steel Corporation subsidiaries for further hearing was that not one pound of the coal mined by the applicant mining companies was either marketed, sold, or shipped in competition with coal mined in the same or an adjacent district and that therefore the essential element of competition was lacking, and a finding of undue prejudice or preference was not maintainable. They asserted there was no charge of undue preference or prejudice by any steel maker who used the cars of the carriers in favor of the steel maker who used private cars. Moreover, they said there was no evidence in the record to that effect, nor had it been urged that any carrier had discriminated between competitive steel companies in the transportation of private cars containing coal for use in the making of steel.

Nor, it was pointed out, was there any evidence to support a finding of unreasonableness in respect of the use of private cars for carrying coal for steel-making.

"It is generally conceded that the allowance by the railroads to the private car owners is inadequate or non-compensatory," said the petition. "Such being the case, what is there unreasonable about the practice, except that the car owner pays too high a rate. On the other hand we submit that any rule the application of which would decrease the available supply of cars for the transportation of freight, increase the cost of operating the railroads and add to the expense of manufacture would be unjust and unreasonable and would impose an unwarranted burden upon interstate commerce."

Needs of the Steel Industry

The applicants went into considerable detail to show why the steel industry must have its own cars to assure itself of the supply of fuel, and to show the commission that the private cars were bought at the solicitation of the railroads because they could not find the money to buy them.

At another point, the Steel Corporation petition said:

"Manufacturing conditions peculiar to the steel industry make necessary a steady and continuous supply of raw materials, the most important of which is coal. Several tons of this commodity are required to produce a ton of finished steel. Experience has demonstrated

that the carriers have been unable to furnish the equipment necessary to transport such large tonnages of this raw material—this for the reasons (1) of the peak demands for transportation when the traffic is abnormal and (2) during normal times the situation in particular districts is such that the local carriers have not the equipment available. At the solicitation of the carriers themselves, the steel companies have invested large sums of money in private cars. Unless such cars are available, it will become necessary at times to close down part of the mills, to curtail manufacture and to throw out of employment many thousands of men, not only those employed in the mills and at the coal mines, but also men employed at limestone quarries and iron ore mines, as well as employees of the steamship companies and the railroad companies which transport these commodities."

Compelled to Furnish Cars

The petition pointed out the fact that because of the special grades of coal needed for the making of coke, used in the manufacture of steel, it is necessary to procure coal from mines located in districts many miles from the ovens. The fluctuating demands on carriers' equipment and the uncertainty of the carriers' car supply have compelled the steel companies and their affiliated coal companies to furnish private cars at their own expense.

Because of the nature of the manufacturing process, it was pointed out that there must be continuous operation of the steel plants because of the great distances between the plants and their adjacent coke ovens, on the one hand and the mines on the other. There is no other method of which applicants know by which the coal can be transported from the mines to the plants in order to meet the requirements of the steel companies and at the same time effect an economical operation of the railroads themselves.

"The furnishing of the coal cars by the steel industries is an outgrowth of the peculiar transportation conditions, in respect of the movement of special grades of coal in large quantities from mines either owned or affiliated with the industries to their blast furnaces, which, when the blast furnaces are in full operation, involves a peak movement," the petition says. "Under normal conditions, applicants' steel plants require approximately 500,000 tons weekly for movement via rail. When the blast furnaces are out, there is no demand on the railroad companies for such heavy transportation. Therefore, in view of this situation, the railroads have invited the mills to furnish their own cars for the transportation of this heavy traffic."

"There is nothing we submit irregular, abnormal or unreasonable in the practice—so long recognized by this commission, by the courts, and by Congress, as proper and lawful."

Pay of Ohio Foundry Employees

The wage report of the Ohio State Foundrymen's Association, Cleveland, for the second quarter of 1923 shows an increase in the rate of pay in practically every class of foundry help.

Below is a comparison of average dollar rates per hour paid the principal classes of labor:

Month	Iron Molders	Core Makers	Brass Molders	Pattern Makers	Common Labor
July, 1922.....	0.719	0.595	0.612	0.648	0.364
October, 1922....	0.655	0.567	0.695	0.653	0.373
December, 1922..	0.673	0.607	0.709	0.71	0.398
April, 1923.....	0.704	0.616	0.714	0.665	0.399
July, 1923.....	0.776	0.701	0.786	0.674	0.437

The Electrical Alloy Co., Morristown, N. J., has commenced operations at its new rolling mill, 60 x 125 ft., recently completed, comprising motor-driven rolls and electric furnace. The mill will be used for rolling special alloys in ribbon and bar shapes for wire production at the other local plant of the company on Ridgedale Avenue.

Strength of Steel at High Temperatures—II*

Behavior of Cobalt, Tungsten and Uranium Alloy Steels —Steels Containing Chromium—General Discussion and Conclusions

BY H. J. FRENCH AND W. A. TUCKER

Steel containing 5 per cent cobalt.—The characteristic changes in tensile properties of normalized 0.6 per cent carbon steel with rise in temperature are not materially altered by addition of 5 per cent cobalt except that a sharper decrease in ductility is observed in the neighborhood of 200 to 250 deg. C. (Fig. 6). The cobalt steel has somewhat higher

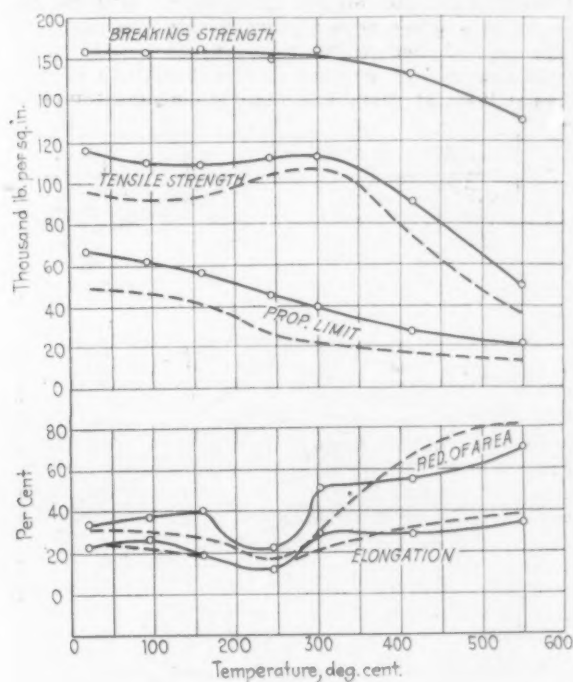


Fig. 6—High Temperature Tensile Properties of Steel Containing 0.6 Per Cent Carbon and 5 Per Cent Cobalt First Heated to 650 Deg. C. and Air Cooled. Composition: C, 0.62; Mn, 0.34; Si, 0.43; Co, 4.96 per cent. Dotted lines show properties of normalized 0.6 per cent carbon steel for comparison. Breaking strength is unit load at moment of fracture.

strength and proportional limit at all temperatures between 20 and 550 deg. C. and in addition equal or better ductility than the carbon steel to about 350 deg. C.; above this temperature, the latter steel has higher values of elongation and reduction of area. Cobalt additions should therefore be of value where increased resistance to weakening at temperatures up to about 550 deg. C. is desired.

Tungsten tool steels.—Test results for two air-cooled tungsten "finishing-tool" steel are shown in Fig. 7. The extreme brittleness maintained to relatively high temperatures, as illustrated by low values of elongation and reduction of area, is without doubt largely due to the high carbon content as is the rather sharp drop in strength in the 1 per cent tungsten steel from about 130,000 to 55,000 lb. per sq. in. in the interval 300 to 550 deg. C., though the first mentioned effect is probably intensified by the tungsten additions. It is unfortunate that no low-carbon tungsten steels were tested as this element would be

expected, from our general knowledge of tungsten steels and high temperature tests already reported, to be of value in delaying the softening of steels in the range around 500 to 600 deg. C., particularly when present in large proportions.

Uranium steels.—It appears from comparison of data in Fig. 8 with the properties of carbon steels that the addition of about 0.20 to 0.35 per cent uranium delays the lowering of the limit of proportionality so that at 550 deg. C. uranium steels show generally higher values than similar steels without additions of this element. Likewise the increase in strength which may be produced at ordinary temperatures is maintained to 550 deg. C. without, in most cases, appreciable loss in ductility.

In quenched steels subsequently tempered at high temperatures (Figs. 9 and 10) the principal advan-

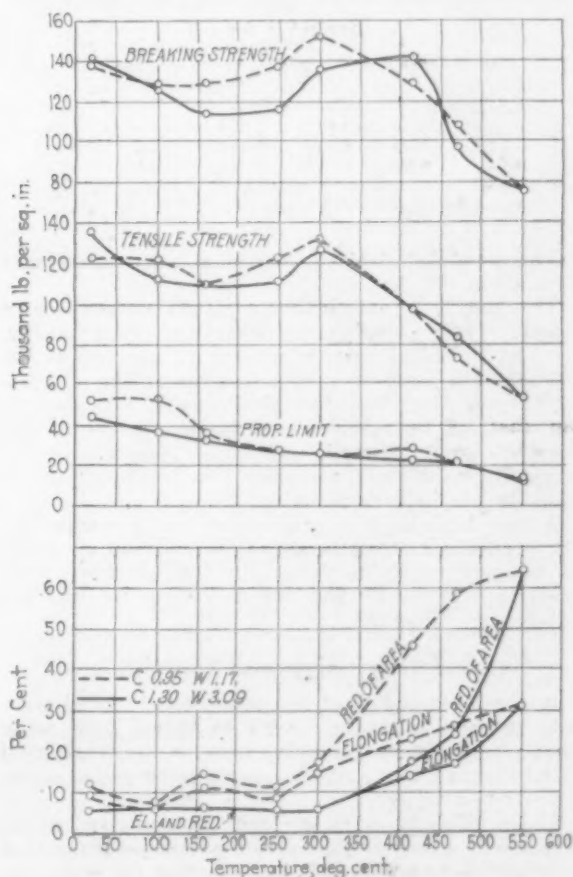


Fig. 7—High Temperature Tensile Properties of Tungsten "Finishing Tool" Steels First Heated to 800 to 815 Deg. C. and Air Cooled. Composition and treatment: C, 0.95; Mn, 0.22; Si, 0.26; W, 1.17. Heated 30 min at 815 deg. C. and air cooled. C, 1.30; Mn, 0.29; Si, 0.19; W, 3.09. Heated 30 min. at 800 deg. C. and air cooled. Breaking strength is unit load at moment of fracture.

tages of uranium additions are noted at temperatures below about 400 deg. C., though there is, of course, observed a slight increase in strength and limit of proportionality at 550 deg. C. But this would probably disappear with further rise in temperature.

Chrome-vanadium, chrome-molybdenum and chrome-nickel steels.—Comparisons of normalized chrome-vanadium (1.00 per cent Cr; 0.20 per cent V) and

*Published by permission of the director of the Bureau of Standards of the U. S. Department of Commerce. The authors are physicist and laboratory aid respectively at the Bureau of Standards, Washington. The first section was published in THE IRON AGE, July 26.

The references in brackets are to the bibliography at the conclusion of this report.

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The applicants went into considerable detail to show why the steel industry must have its own cars to assure itself of the supply of fuel, and to show the commission that the private cars were bought at the solicitation of the railroads because they could not find the money to buy them.

At another point, the Steel Corporation petition said:

"Manufacturing conditions peculiar to the steel industry make necessary a steady and continuous supply of raw materials, the most important of which is coal. Several tons of this commodity are required to produce a ton of finished steel. Experience has demonstrated

that the carriers have been unable to furnish the equipment necessary to transport such large tonnages of this raw material—this for the reasons (1) of the peak demands for transportation when the traffic is abnormal and (2) during normal times the situation in particular districts is such that the local carriers have not the equipment available. At the solicitation of the carriers themselves, the steel companies have invested large sums of money in private cars. Unless such cars are available, it will become necessary at times to close down part of the mills, to curtail manufacture and to throw out of employment many thousands of men, not only those employed in the mills and at the coal mines, but also men employed at limestone quarries and iron ore mines, as well as employees of the steamship companies and the railroad companies which transport these commodities."

Compelled to Furnish Cars

The petition pointed out the fact that because of the special grades of coal needed for the making of coke, used in the manufacture of steel, it is necessary to procure coal from mines located in districts many miles from the ovens. The fluctuating demands on carriers' equipment and the uncertainty of the carriers' car supply have compelled the steel companies and their affiliated coal companies to furnish private cars at their own expense.

Because of the nature of the manufacturing process, it was pointed out that there must be continuous operation of the steel plants because of the great distances between the plants and their adjacent coke ovens, on the one hand and the mines on the other. There is no other method of which applicants know by which the coal can be transported from the mines to the plants in order to meet the requirements of the steel companies and at the same time effect an economical operation of the railroads themselves.

"The furnishing of the coal cars by the steel industries is an outgrowth of the peculiar transportation conditions, in respect of the movement of special grades of coal in large quantities from mines either owned or affiliated with the industries to their blast furnaces, which, when the blast furnaces are in full operation, involves a peak movement," the petition says. "Under normal conditions, applicants' steel plants require approximately 500,000 tons weekly for movement via rail. When the blast furnaces are out, there is no demand on the railroad companies for such heavy transportation. Therefore, in view of this situation, the railroads have invited the mills to furnish their own cars for the transportation of this heavy traffic."

"There is nothing we submit irregular, abnormal or unreasonable in the practice—so long recognized by this commission, by the courts, and by Congress, as proper and lawful."

Pay of Ohio Foundry Employees

The wage report of the Ohio State Foundrymen's Association, Cleveland, for the second quarter of 1923 shows an increase in the rate of pay in practically every class of foundry help.

Below is a comparison of average dollar rates per hour paid the principal classes of labor:

Month	Iron Molders	Core Makers	Brass Molders	Pattern Makers	Common Labor
July, 1922.....	0.719	0.595	0.612	0.648	0.364
October, 1922....	0.655	0.567	0.695	0.653	0.373
December, 1922...	0.673	0.607	0.709	0.71	0.398
April, 1923.....	0.704	0.616	0.714	0.665	0.399
July, 1923.....	0.776	0.701	0.786	0.674	0.437

The Electrical Alloy Co., Morristown, N. J., has commenced operations at its new rolling mill, 60 x 125 ft., recently completed, comprising motor-driven rolls and electric furnace. The mill will be used for rolling special alloys in ribbon and bar shapes for wire production at the other local plant of the company on Ridgedale Avenue.

Strength of Steel at High Temperatures—II*

Behavior of Cobalt, Tungsten and Uranium Alloy Steels —Steels Containing Chromium—General Discussion and Conclusions

BY H. J. FRENCH AND W. A. TUCKER

Steel containing 5 per cent cobalt.—The characteristic changes in tensile properties of normalized 0.6 per cent carbon steel with rise in temperature are not materially altered by addition of 5 per cent cobalt except that a sharper decrease in ductility is observed in the neighborhood of 200 to 250 deg. C. (Fig. 6). The cobalt steel has somewhat higher

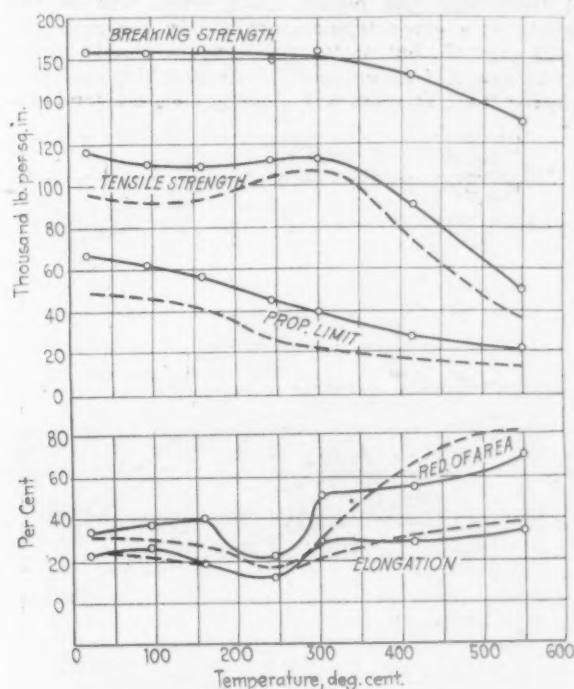


Fig. 6—High Temperature Tensile Properties of Steel Containing 0.6 Per Cent Carbon and 5 Per Cent Cobalt First Heated to 650 Deg. C. and Air Cooled. Composition: C, 0.62; Mn, 0.34; Si, 0.43; Co, 4.96 per cent. Dotted lines show properties of normalized 0.6 per cent carbon steel for comparison. Breaking strength is unit load at moment of fracture.

strength and proportional limit at all temperatures between 20 and 550 deg. C. and in addition equal or better ductility than the carbon steel to about 350 deg. C.; above this temperature, the latter steel has higher values of elongation and reduction of area. Cobalt additions should therefore be of value where increased resistance to weakening at temperatures up to about 550 deg. C. is desired.

Tungsten tool steels.—Test results for two air-cooled tungsten "finishing-tool" steel are shown in Fig. 7. The extreme brittleness maintained to relatively high temperatures, as illustrated by low values of elongation and reduction of area, is without doubt largely due to the high carbon content as is the rather sharp drop in strength in the 1 per cent tungsten steel from about 130,000 to 55,000 lb. per sq. in. in the interval 300 to 550 deg. C., though the first mentioned effect is probably intensified by the tungsten additions. It is unfortunate that no low-carbon tungsten steels were tested as this element would be

expected, from our general knowledge of tungsten steels and high temperature tests already reported, to be of value in delaying the softening of steels in the range around 500 to 600 deg. C., particularly when present in large proportions.

Uranium steels.—It appears from comparison of data in Fig. 8 with the properties of carbon steels that the addition of about 0.20 to 0.35 per cent uranium delays the lowering of the limit of proportionality so that at 550 deg. C. uranium steels show generally higher values than similar steels without additions of this element. Likewise the increase in strength which may be produced at ordinary temperatures is maintained to 550 deg. C. without, in most cases, appreciable loss in ductility.

In quenched steels subsequently tempered at high temperatures (Figs. 9 and 10) the principal advan-

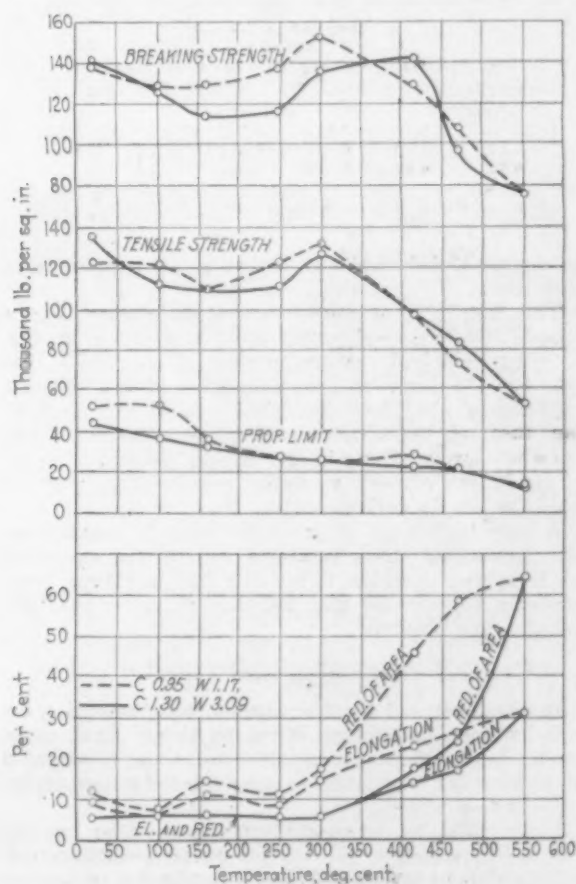


Fig. 7—High Temperature Tensile Properties of Tungsten "Finishing Tool" Steels First Heated to 800 to 815 Deg. C. and Air Cooled. Composition and treatment: C, 0.95; Mn, 0.22; Si, 0.26; W, 1.17. Heated 30 min at 815 deg. C. and air cooled. C, 1.30; Mn, 0.29; Si, 0.19; W, 3.09. Heated 30 min. at 800 deg. C. and air cooled. Breaking strength is unit load at moment of fracture.

tages of uranium additions are noted at temperatures below about 400 deg. C., though there is, of course, observed a slight increase in strength and limit of proportionality at 550 deg. C. But this would probably disappear with further rise in temperature.

Chromium-vanadium, chromium-molybdenum and chromium-nickel steels.—Comparisons of normalized chromium-vanadium (1.00 per cent Cr: 0.20 per cent V) and

*Published by permission of the director of the Bureau of Standards of the U. S. Department of Commerce. The authors are physicist and laboratory aid respectively at the Bureau of Standards, Washington. The first section was published in THE IRON AGE, July 26.

The references in brackets are to the bibliography at the conclusion of this report.

chrome-nickel (1.00 per cent Cr: 3.00 per cent Ni) steels containing about 0.38 per cent carbon were reported in a previous publication [9] and showed that the former was to be preferred from the standpoint of high strength and limit of proportionality at 550 deg. C. in a short-time test. While this steel showed greater resistance to "weakening," the strength of

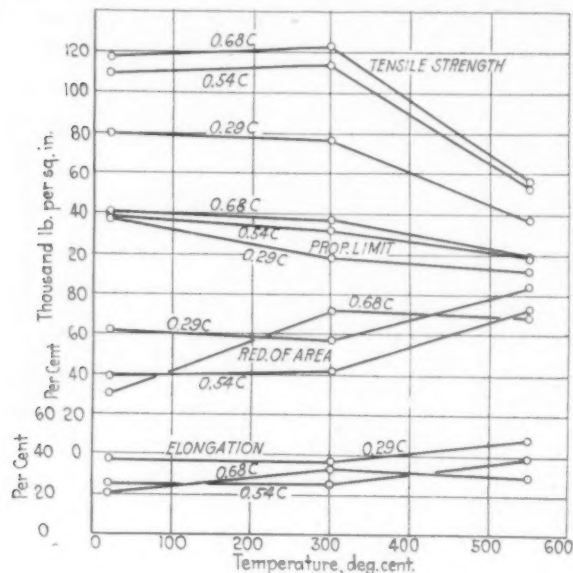


Fig. 8.—Tensile Properties of Normalized Carbon-Uranium Steels at 20, 300 and 550 Deg. C. Composition:

C, 0.29 Mn, 0.66 P, 0.015 S, 0.016 Si, 0.30 Ur, 0.19
0.54 0.60 0.031 0.015 0.25 0.21
0.68 0.39 0.016 0.016 0.24 0.29

Steels normalized by heating respectively to 900, 850 and 825 deg. C. and after 30 min. cooling in air.

the chrome-nickel steel was higher at all temperatures below about 475 deg. C.

The tensile properties-temperature curves for a typical chrome-molybdenum steel are given in Fig. 11. The principal feature worthy of mention is the fact that the limit of proportionality of the chrome-molybdenum steel has decreased less at 550 deg. C. than that of the chrome-vanadium, though it has somewhat lower strength and higher ductility, under the conditions of test, probably due in large part to the difference in carbon content.

A very high limit of proportionality in comparison with normalized steels is also shown in the quenched and tempered samples (Fig. 11) but at lower temperatures between 20 and 300 deg. C. no special advantages are observed.

General Discussion and Conclusions

In the foregoing brief discussion comparisons were made between individual steels to throw light upon the effects of different alloying elements or treatments but no attempt was made to consider the entire series of steels as a whole.

Little difficulty is encountered in securing metals of sufficient strength for service at temperatures not exceeding about 300 deg. C. but selection for operating temperatures of 550 to 600 deg. C. or above is a more difficult matter. Short-time tensile tests, such as were carried out by the authors, do not give much of the information desired on account of the extreme importance of the time factor but it would be reasonably expected that steels having the highest limit of proportionality in this temperature range in a short-time test would in general be able to withstand higher sustained loads without considerable flow than those with low proportional limits, though not in direct proportion to the observed values. Steels in a highly unstable condition, such as quenched metal not subsequently tempered are, of course, excluded. Therefore comparison of the entire series of steels was made on the basis of proportional limit and the six alloys having highest values at room temperature, 300 and 550 deg. C. are listed in order in Table 1.

The most striking feature observed is the predominance of steels containing chromium and the absence of those containing nickel except in combination with other elements such as uranium or chromium. For example, at 550 deg. C. five of the six steels showing highest limit of proportionality contain chromium; two also contain molybdenum and additions of vanadium or uranium are each found in one case.

Table 1 shows likewise that a comparison of the proportional limit at ordinary temperatures is no indication of the relation at elevated temperatures either around 300 or at 550 deg. C. However, the order of strength superiority at 20 deg. C. is an approximate indication of the relation at all temperatures up to about 400 deg. C., but does not hold good at much higher temperatures, as is shown in Table 2. In other words the higher the strength produced at ordinary temperatures by suitably chosen compositions and treatments the higher, in general, will be the strength at a given temperature within the range 20 to 400 deg. C., but wide variations in elastic ratios may be expected on account of the sensitivity of proportional limit at room and slightly elevated tempera-

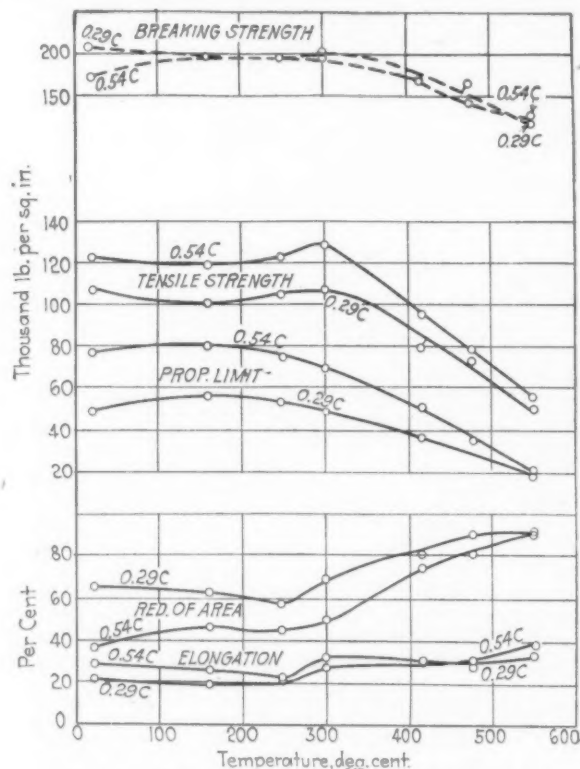


Fig. 9.—High Temperature Tensile Properties of Quenched and Tempered Carbon-Uranium Steels. Composition:

C, 0.29 Mn, 0.66 P, 0.015 S, 0.016 Si, 0.30 Ur, 0.19
0.54 0.60 0.031 0.015 0.25 0.21

First steel quenched in water from 900 deg. C. and tempered 30 min. at 600 deg. C. Second steel quenched in water from 850 deg. C. and tempered 30 min. at 600 deg. C.

Breaking strength is unit load at moment of fracture.

tures to stress conditions in the metal, a feature previously emphasized in discussion of carbon steels.

Conclusions

Probably the most important conclusions to be drawn from the described tests may be summarized as follows:

1. The effect of temperature rise to about 600 deg. C. is to reduce tensile strength and proportional limit and greatly increase ductility. Certain combinations of composition and treatment, notably normalized chrome-vanadium, quenched and tempered stainless, and air cooled 28 per cent nickel steels are strongest at ordinary temperatures, but carbon and the majority of alloy steels tested show maximum strength

and minimum ductility at temperatures within the range of 200 to 350 deg. C.

2. The proportional limit of medium or low-carbon steel, which has been largely relieved of stress by suitable treatment, decreases with rise

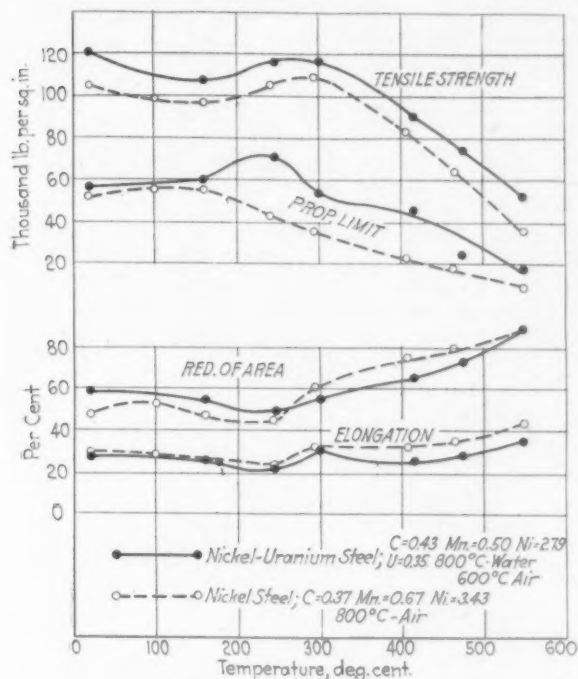


Fig. 10—High Temperature Tensile Properties of Quenched and Tempered Nickel-Uranium and Normalized 3.50 Per Cent Nickel Steels. Composition:

Ni-Ur steel: C, 0.43; Mn, 0.50; Si, 0.50; Ni, 2.79; Ur, 0.35; 3.50 per cent Ni steel: C, 0.37; Mn, 0.67; Si, 0.20; Ni, 3.43 per cent.

in temperature. In highly stressed metal, resulting from cold or blue-work or quenching and that having residual stress such as often exists in thin sections of hot finished steel, the proportional limit either remains at approximately its room temperature value over a well defined interval or shows an increase with first rise in temperature.

3. From the standpoint of high strength and limit of proportionality of steels at elevated temperatures the temperature scale may be divided roughly into 3 parts; (1) the range 20 to about 450 deg. C.; (2) the range 450 to 600 deg. C.; (3) above 600 deg. C.

4. In the lowest range high strength and proportional limit are functions of composition and heat treatment and in general combinations giving highest strength at ordinary temperatures show similar superiority throughout the entire range. It is, however, advisable to keep carbon low since brittleness, illustrated by low values of elongation and reduction of area, increases

rapidly with increase in carbon content, particularly in the blue heat range.

5. The upper limit in the second or transition range requires nearly full tempering following hardening so that in most cases the benefits to be derived from heat treatment are limited except in the lower portion of the range and high strength and limit of proportionality are largely functions of composition. While short-time tests, such as were carried out by the authors, do not give direct comparisons of steels subjected to sustained loads on account of the importance of the time factor, it would be reasonably expected that steels having highest limits of proportionality would be able to sustain higher loads than those with low proportional limits though not in direct proportion to observed values. On this basis of comparison it appears possible to improve the properties of steel by adding such elements as chromium, cobalt, uranium, molybdenum and vanadium. On the other hand nickel even in large proportions appears to "soften"

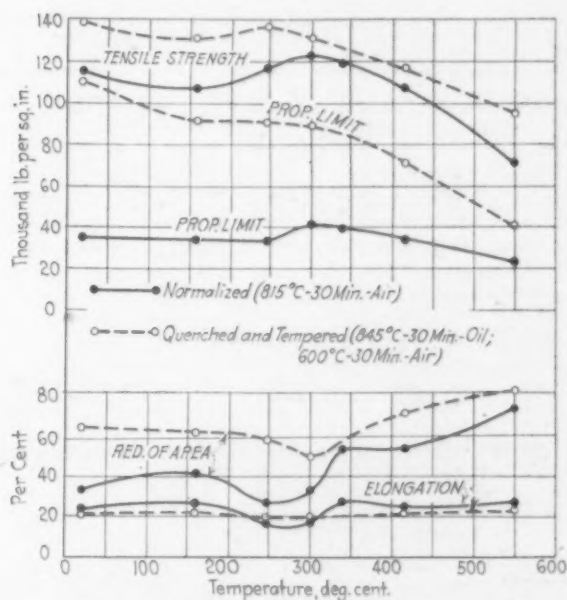


Fig. 11—High Temperature Tensile Properties of Chromium-Molybdenum Steel First Normalized or Quenched and Tempered. Composition:

C, 0.27; Mn, 0.62; P, 0.018; S, 0.008; Si, 0.26; Cr, 0.99; Mo, 0.41 per cent.

rather than strengthen steel in this range, particularly at about 550 deg. C. and above.

6. It is known that the drop in strength and proportional limit at temperatures around 550 deg. C. is permanent and that additional rise in temperature is accompanied by a further decrease in values so that the described tests also throw light upon what may be expected at higher temperatures. It would therefore appear improbable that commercial steels can be pro-

Proportional Limit, lb. per sq. in.	Steel	Heat Treatment	Tensile Strength lb. per sq. in.	Elongation Reduction in 2 in. Per Cent	of Area, Per Cent
	At 550 deg. C.				
40,500.....	0.27% C; 0.99% Cr; 0.41% Mo	845°C-oil; 600°C-air	95,700	23.5	80.6
33,000.....	0.38% C; 1.98% Cr; 0.18% V	900°C-air	80,900	22.5	74.8
	0.31% C; 12.75% Cr	1150°C-oil; 675°C-air	69,800	12.0	16.7
25,750.....	0.31% C; 12.75% Cr	955°C-oil; 675°C-air	60,500	26.3	76.3
23,750.....	0.27% C; 0.99% Cr; 0.41% Mo	815°C-air	70,600	27.0	72.4
21,250.....	0.43% C; 2.79% Ni; 0.35% Ur	800°C-air	48,440	36.0	84.8
	At 300 deg. C.				
88,250.....	0.27% C; 0.99% Cr; 0.41% Mo	845°C-oil; 600°C-air	131,200	19.5	49.5
77,500.....	0.37% C; 0.93% Cr; 3.05% Ni	850°C-air	172,500	23.5	63.1
74,500.....	0.37% C; 1.04% Cr; 0.18% V	850°C-air	142,250	18.0	45.8
70,000.....	0.54% C; 0.21% Ur	850°C-water; 600°C-air	128,570	26.5	49.5
63,750.....	0.43% C; 2.79% Ni; 0.35% Ur	800°C-water; 600°C-air	117,550	30.0	54.4
58,000.....	0.31% C; 12.75% Cr	1150°C-oil; 675°C-air	97,380	7.5	13.2
	At 20 deg. C.				
110,650.....	0.27% C; 0.99% Cr; 0.41% Mo	845°C-oil; 600°C-air	139,250	21.0	63.1
88,000.....	0.37% C; 1.04% Cr; 0.18% V	850°C-air	144,300	19.5	42.5
77,000.....	0.54% C; 0.21% Ur	850°C-water; 600°C-air	122,400	21.0	36.4
66,750.....	0.62% C; 4.96% Co	850°C-air	116,050	22.3	23.9
64,000.....	0.43% C; 2.79% Ni; 0.35% Ur	800°C-air	112,100	27.5	50.5
63,500.....	0.31% C; 12.75% Cr	955°C-oil; 675°C-air	111,500	24.5	60.8

*Experimental melts prepared in induction furnace, K, L, and M, have not been considered.

duced, to withstand continuously fairly large loads at temperatures above about 650 deg. C. except when large proportions of one or more alloying elements are added to reduce the iron content to such low values that the resulting product cannot correctly be called steel, or in special cases where extremely large proportions of special compounds are present.

Table 2—The Six Steels and Treatments Producing Highest Strength at Various Temperatures Selected from the 27 Lots Tested as Shown in Table 1

(Experimental heats K, L and M not considered)

Steel	Treatment* Letter in Table 1	Code	Position in list based on highest tensile strength		
			At 20 deg. C	At 300 deg. C	At 550 deg. C
Chrome-nickel	N	O	1	1	4
Chrome-vanadium	N	Q	2	3	3
Chrome-vanadium	N	P	3	2	2
Chrome-molybdenum	Q&T	S	4	4	1
Tungsten	N	U	5	5	—
Carbon-uranium (54% C.)	Q&T	BB	6	6	—
Chrome-molybdenum	N	R	—	—	5
Stainless	Q&T	N	—	—	6

*N=air cooled from above the transformations; Q&T=quenched and tempered. Complete chemical composition and heat treatments shown in figures.

Some of the steels tested were donated specially for the described tests or taken from steel similarly supplied for general investigative work. Acknowledgments are therefore due to the following organizations: Nitrate division, ordnance dept., U. S. Army for the 0.38 per cent carbon, 3.50 per cent nickel, low chrome-vanadium and nickel-chromium steels; Lukens Steel Co., Coatesville, Pa., for the 0.18 per cent carbon steel; Carnegie Steel Co., Pittsburgh, and Ludlum Steel Co., Watervliet, N. Y., for the remaining carbon steels; Doehler Die Casting Corporation, Brooklyn, for the high chrome-vanadium steel and the Standard

Alloys Co., Pittsburgh, for all heats containing uranium. Acknowledgement is also made to R. P. Neville,

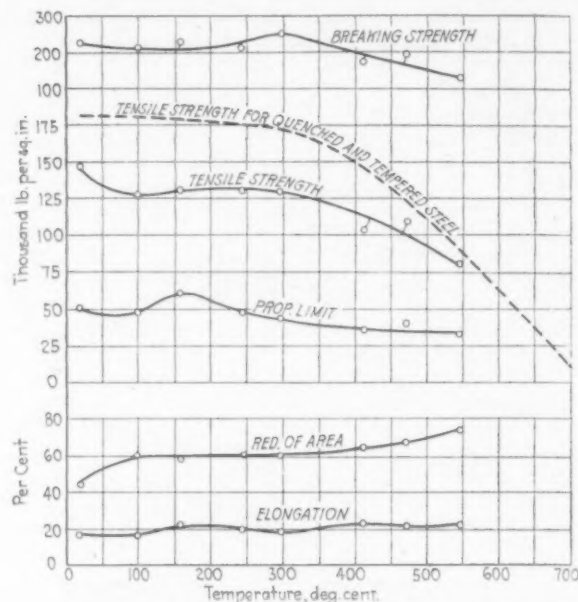


Fig. 12—High Temperature Tensile Properties of Chromium-Vanadium "Die Steel" Air Cooled from 900 Deg. C. Composition:

C, 0.38; Mn, 0.56; P, 0.011; S, 0.014; Si, 0.16; Cr, 1.98; V, 0.18 per cent.

Breaking strength is unit load at moment of fracture.

associate chemist, for preparing the high chromium steel ingots, series K, L and M, and to A. T. Derry, associate physicist, for forging these metals.

Selected Bibliography on Mechanical Tests of Alloy Steels at High Temperatures

(For bibliography on Carbon steels refer to Bureau of Standards Tech. Paper 219).

1. I. M. Bregowsky and L. W. Spring, "The Effect of High Temperature on the Physical Properties of Some Alloys," *Proc. Int. Assoc. for Testing Materials*, VI Congress, VII, 1; 1912.

Tension tests from 20 to 595 deg. C. of rolled 30 per cent nickel steel.

Torsion tests from 20 to 595 deg. C. of 25 and 30 per cent nickel steels; oil tempered 3.50 nickel-vanadium steel; annealed carbon-vanadium tool steel.

2. Schulz, "Neuer Versuche und Erfahrungen mit Turbinenschaufel-material für hohe Temperaturen," *Die Turbine*, 9, pp. 225, 243, 266 (1913).

Discussion of the high temperature properties is given for pure iron, 5 and 25 per cent nickel and nickel-chromium steels as well as pure metals and non-ferrous alloys.

3. J. E. Hurst and H. Moore, "Materials for the Exhaust Valves of Internal Combustion Engines," *London Engineering* (Nov. 19, 1919), p. 673.

Discusses the requirements of steels for valves in internal combustion engines and the specifications and properties including those at high temperatures of a variety of steels used for such purposes.

4. L. Aitchison, "Valve Failures and Valve Steels in Internal Combustion Engines," Paper read before the Institution of Automobile Engineers, Nov. 5, 1919. *London Engineering* (Dec. 12, 1919), p. 799.

Discusses requirements of motor valves and gives tensile test data up to about 1000 deg. C. for a variety of steels used for such parts. Compares high tungsten, high chromium, 3 per cent nickel and nickel chromium steels on the basis of the various requirements.

5. G. Gabriel, "Comparative Values of Motor Valve Steels," *THE IRON AGE*, 106, p. 1465, 1920.

Tensile tests at various temperatures between 650 and 1000 deg. C. on chromium steels containing from 2.8 to 13.1 per cent chromium and 0.35 to 1.4 per cent carbon subjected to various preliminary treatments; quenched and tempered chromium-tungsten and chromium-tungsten-vanadium (high-speed) steels; structural nickel-chromium and chromium-vanadium steels subjected to various heat treatments or in the hot worked condition.

6. A. H. d'Arcambal, "Physical Tests on High-Speed

Steels," *Trans. Amer. Soc. for Steel Treating*, II, No. 7, p. 586; 1921.

Gives values of tensile strength between 20 and 650 deg. C. for low tungsten-high vanadium and high tungsten-low vanadium high-speed tool steels after heat treatment such as is ordinarily used for tools.

7. R. S. MacPherran, "Comparative Tests of Steels at High Temperatures," *Proc. Amer. Soc. for Testing Materials*, 21, p. 852; 1921.

Tensile tests between 20 and about 650 deg. C. of annealed 3.25 and 34 per cent nickel steels; quenched and tempered structural nickel-chromium and chromium-vanadium steels; quenched and tempered 3.4 per cent chromium and rolled high-nickel-chromium steels.

8. A. P. Spooner, Discussion of paper by MacPherran referred to above, *Proc. Amer. Soc. for Testing Materials*, 21, p. 863; 1921.

Tensile tests between 20 and about 870 deg. C. of annealed or normalized steels of the following types; 3.50 per cent nickel; nickel-chromium (2:1); chromium-vanadium; chromium-molybdenum; stainless (14 per cent Cr); high-speed steel; 31 per cent chromium steel.

9. H. J. French, "Tensile Properties of Some Structural Alloy Steels at High Temperatures," Bureau of Standards Tech. Paper 205, Dec. 1921.

Tensile tests from 20 to 550 deg. C. of normalized steels containing about 0.38 per cent carbon as follows: (1) carbon steel (2) 3.50 per cent nickel steel (3) steel containing 3 per cent nickel and 1 per cent chromium (4) steel containing 1 per cent chromium and 0.2 per cent vanadium.

10. H. Edert, "Warmversuche mit Sonderstählen," *Stahl und Eisen*, 42, p. 961, 1922.

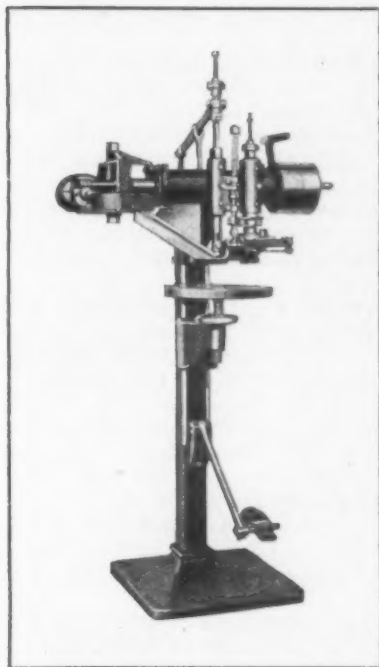
Brinell hardness, impact, bending and tensile tests up to 800 deg. C. of quenched or quenched and tempered nickel-chromium steels containing 1.9 to 5.8 per cent nickel, 1.7 to 20.6 per cent chromium and 0.12 to 0.31 per cent carbon and chromium-vanadium steel containing 2.4 per cent chromium and about 0.6 per cent vanadium.

11. T. H. S. Dickenson, "Flow of Steel at Red Heat," Paper before the British Iron & Steel Institute, September, 1922. *London Engineering* (Sept. 15, 1922), p. 265.

Discusses short-time vs. long-time tests at high temperatures and gives for both types limiting temperatures below which 0.3 per cent carbon, nickel-chromium, stainless and high speed steels can stand 8.5 tons per sq. in. without suffering sensible deformation.

Automatic Screw-Driving Machine

The machine illustrated, which is for driving short screws and screws with short bodies and large heads, is a recent addition to line of the Reynolds Machine Co. Massillon, Ohio. It may be adapted also to drive electrical binding screws, washer-head screws, switch box and other types of screws that cannot be driven by the company's standard machines.



Among the features it may be mentioned that no handling of the screws is required beyond keeping the hopper supplied. The machine will magazine and

drive screws from No. 4 to 10 inclusive and up to 1/2 in. long. It will drive screws to the center of a 14 in. circle and set screws tight or loose, as required.

The spindle runs at 800 r.p.m. and the pulley at 400 r.p.m. Two types of tables are available, 12 in. in diameter or 14 x 24 in.; and the table may be adjusted 2 in. without moving the bracket on the column. The size of the base is 18 x 20 in. and the height of the machine 5 ft. 6 in.

Production of Iron and Steel in Canada Declined in June

The production of pig iron in Canada during June declined slightly from the record output of the previous month. The output for June was 99,239 long tons as compared with 101,533 tons in May. Analyzing the production of pig iron for May and June, it will be noted that the output of foundry iron produced for sale increased from 23,242 tons in May to 28,144 tons in June; while basic iron produced for the further use of the companies reporting declined from 61,714 tons in May to 55,565 tons in June. The chief reason for the falling off in the production of pig iron during June was the closing down of three blast furnaces at the Sydney, N. S., plant of the British Empire Steel Corporation, on account of labor troubles. At the end of June only seven furnaces were in blast, as follows: Two at Hamilton, Ont., operated by the Steel Co. of Canada; four at Sault Ste. Marie, Ont., by the Algoma Steel Corporation, and one at Port Colborne, Ont., operated by the Canadian Furnace Co. The production of ferroalloys declined slightly from 2287 tons in May to 2185 in June. The entire quantity in both months was ferrosilicon produced in electric furnaces for sale.

The production of steel declined from the record output of 104,079 tons in May to 96,167 tons in June. This decline in the production of steel is also directly attributed to the labor troubles at Sydney, N. S., where open-hearth furnaces, in fact, the entire plant, was forced to cease operations for a time. Just as conditions were approaching normal, bombs planted at vital points wrecked water lines and caused another shut-down. There is little hope that operations will be resumed to any considerable extent until repairs have been made.

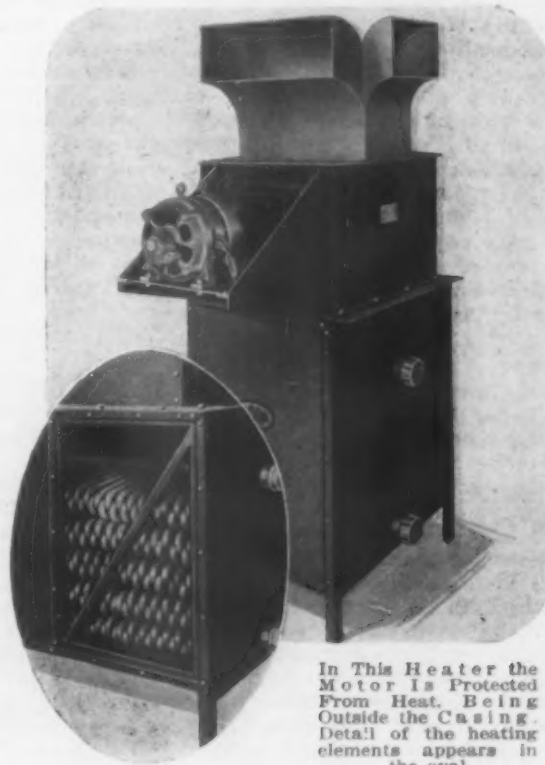
Unit Air Heater for Industrial Use

The York Heating & Ventilating Corporation, Bridgeport, Pa., has recently placed on the market a unit heater which it recommends for industrial heating and ventilating purposes. The makers claim for it several advantages that have not been embodied in previous units of this type. In the first place, the heating coil is made of the best grade of pipe, with all joints at both headers welded, and the whole is tested to a pressure of over 200 lb. per sq. in. This permits the unit to be used with either high or low-pressure steam, as desired. Another distinctive feature is claimed in the air-circulating fan, which has been provided with ball bearings of the self-aligning type, to insure quiet and vibration-free operation. The bearings are outside of fan housing and out of contact with hot air.

These units require the minimum of floor space for the amount of heat supplied. In the accompanying photograph is shown this unit provided with a bracket on one side upon which the motor is mounted and direct connected to the circulating fan.

This heater is provided with a discharge outlet at the top, which will direct the air in one, two, three or four directions, as desired. The air inlet at the bottom takes the air from all four sides, thus having a low velocity of entrance and insuring the removal of the cold air from the floor, where it naturally settles. Due to the height of this unit, a considerable amount of heat will be generated with a reduced quantity of air, even when fan is not in operation.

These units are supplied from a capacity of 346,000



In This Heater the Motor is Protected From Heat, Being Outside the Casing. Detail of the heating elements appears in the oval

B.t.u. per hour and a circulation of 3870 cu. ft. of air per minute, up to a maximum capacity of 1,850,000 B.t.u. per hour, and 19,640 cu. ft. of air per minute.

A competitive examination for selecting a junior metallurgist for the Bureau of Mines at Tuscaloosa, Ala., has been announced by the United States Civil Service Commission, Washington, to which application should be made for further information.

The Mahoning Foundry Co., Youngstown, recently settled all labor difficulties with its molders and is now operating as a closed shop, employing union labor throughout. The company manufactures furnaces and light and heavy castings.

BOOK REVIEWS

Metallography: Metals and Common Alloys. Part II. By S. L. Hoyt. Pages 462 + ix, 6 3/4 x 9 1/4 in., 142-illustrations and 126 tables. Published by McGraw-Hill Book Co., New York.

This is Doctor Hoyt's second volume in his series of three on the subject of Metallography and the book covers in a general way the following subjects: Pure metals, white metal alloys, light metals, brasses and bronzes, steel and cast iron, special steels.

In the chapter on pure metals, their general properties are discussed in a manner which covers broadly the chief characteristics, as hardness, electrical conductivity, mechanical strength and structural features. The treatment of iron and copper is much more complete than are the other metals.

While not bearing the stamp of rare distinction of original research characterizing Rosenhain's book, this book contains considerably wider references to the subject matter. As a reference work for engineer or laboratory it will be found quite useful. The volume is profusely illustrated with equilibrium diagrams, graphs and photomicrographs, the latter uniformly excellent.

The chapter on the brasses is ample enough to satisfy its place in a book of this scope. Here, as elsewhere in the work, the references are recent and have been selected with discrimination.

In the chapter on iron and steel, the matter of the equilibrium diagrams is discussed rather fully. New researches, published since this book was written, particularly Westgren's X-ray analysis on the existence of cementite or carbon in the dissolved state, that of Honda on the revised iron-carbon diagrams, shed further light on the subject. The matter is still partly in a state of flux and a study of the present volume will readily prepare one for following up the more specialized investigations. For obtaining this background, Doctor Hoyt's present work is admirably suited. What at first glance may appear to be a pedantic presentation of the subject later passes for a sincere effort to present all of the sides of what is still in some aspects a debatable question, namely the equilibrium conditions of the iron-carbon system. The chapter on the special steels is good and is ample in scope.

Steel Thermal Treatment. By John W. Urquhart. Pages 336 + xv, 6 x 9 1/4 in., 136 illustrations. Published by D. Van Nostrand & Co., New York. Price, \$8, net.

This book has been written by a practical man of many years' experience and differs from many books that have come from practical men in that its subject matter has been carefully edited from the viewpoint of modern metallurgical science, thus interpreting the practical in the light of the theory of heat treatment.

The book has good type, is attractively bound and particularly is the flow of diction to be commended because it makes for easy reading. One regrets, however, that the references could not have been a little more carefully included. The author has been very free from the criticism of not giving credit to authorities quoted but, on the other hand, the absence of particular references will somewhat curtail the use of the book as a reference book for class work. It is otherwise admirably suited to that purpose.

The chapter on equipment is of course treated from the English point of view and is too meager in places since some of the most useful pyrometric equipment is not mentioned.

As a reference for the practical heat treater the book mentions many "kinks," familiarity with which can only come after years of experience. This book is well worth the price to any heat-treating shop and can be profitably read because it presents a good outline of the present state of art.

The important place given to stainless steel indicates the prominence of this alloy in English practice. The specialist reading the book will constantly regret that more detail has not been given on numerous items,

especially in the treatment of high-speed steels. This, however, is a limitation which could hardly have been overcome within the scope of 336 pages.

Advertising to Retailers. By R. L. Burdick. Pages 308, 5 1/2 x 8 1/2 in.; illustrated. Published by the Ronald Press Co., 20 Vesey Street, New York. Price, \$3.50.

Getting adequate distribution of products in an economic manner is a problem of such importance that the manufacturer, advertising manager, sales executive, and business man generally, will welcome the fresh help which Mr. Burdick's book will afford. While it contains little that is radically new, it has the outstanding merit of segregating and analyzing the best procedures for developing trade distribution. It comprises, in effect, an outline of tried methods which have "worked" and will "work."

It is difficult to mention all of the particularly good points in the uniformly excellent treatment which characterizes the book. If any parts merit special commendation they are the chapters on "What Is a Retailer?", "What Can Be Advertised to Retailers?", "Training the Appeal to Retailers" and "Means and Mediums for Advertising to Retailers." The emphasis he places on responsibly audited circulations and the importance of distinguishing between papers which are bought on paid subscription and publications which are distributed free—the latter really belonging in the category of circulars, printed matter, etc.—is especially vital and appropriate today.

The book has had the advantage of careful reading while in manuscript by publishers of retail publications, advertising men and teachers in universities. It is appropriately illustrated by 50 full page reproductions of advertisements, charts, etc.

Locomotive Catechism, 1923 Edition. By Robert Grimshaw. Pages xi + 958 + 39; about 500 illustrations. Published by Norman W. Henley Publishing Co., 2 West Forty-fifth Street, New York. Price, \$4.

This, the thirtieth edition of a work first published in 1893, has been revised and enlarged to bring it fully abreast of the latest practice in locomotive engineering. It is divided into 89 chapters and an index, each chapter taking care of some specific topic likely to come up in examinations of firemen, engineers, trainmen, switchmen, shop hands and roundhouse men.

Among the most recent pieces of information covered will be found data on compound, electric and uniflow locomotives, on the Walschaert valve gear, super heaters, air brakes, etc. The author, who has been connected with the American Railway Master Mechanics' Association and Master Car Builders' Association, etc., has prepared the work from first hand data. It deals not only in the underlying principles, but also in the practical handling and operation, of all kinds of locomotives.

Income Tax Procedure—1923. By Robert H. Montgomery, C. P. A. Pages xxix + 1750, 5 1/2 x 8 1/2 in. Published by the Ronald Press Co., 20 Vesey Street, New York. Price, \$10.

The Ronald Press Co., New York, has just issued another volume of 1750 pages treating on all phases of the Federal income tax. There is hardly a question a corporation may ask that is not answered. The book is divided into four sections: Application Administration; Income; Deductions and Special Classes of Tax Payers. Considerable space is devoted to undistributed profits of corporations. One feature is the number of rulings on technical points. The index of these cases covers 16 1/2 pages. Many of these are in answer to the question, "What is a stock dividend?"

New Books Received

A Manual of Artificial Respiration. By Capt. G. R. G. Fisher. Pages 80, 4 1/2 x 6 in.; illustrations 22. Published by Stratford Co., Publishers, 234 Boylston Street, Boston. Price, 75 cents.

The Electric Furnace for Iron and Steel. By Alfred Stansfield. Pages 453, 6 x 9 in.; illustrations 139. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$5.

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The Farmers and Organized Labor

The Western farmers have recently been having some political conventions and economic conferences. Into some of these the labor unions and communist organizations injected themselves. In one instance the communists captured the meeting, but the farmers whose eyes had been opened retired in disgust. The American farmer is, in fact, individualistic and capitalistic, although he might not so identify himself. In his ignorance he has sometimes permitted socialistic experiments to be tried upon him. But when socialism, syndicalism and communism are presented to him in recognizable forms he has no appetite for them.

At the wheat conference in Chicago in June there were present Mr. Gompers and Mr. Stone, who pledged the support of their labor organizations to whatever follies the farmers might be contemplating in order to raise the price for wheat. The labor leaders can and do freely promise their aid in efforts whereof they know the futility. All that they ask is a free hand in carrying out their own purposes of higher wages for organized labor. So long as the farmers collaborate with them they give something for nothing. Nay, worse than that, they ally themselves against their own interests.

The main cause for agricultural distress at the present time is not that prices are too low, but rather that costs are too high, this being a consequence of the exactions that town labor has found itself able to make and maintain. These exactions are imposed not only upon the farmers of the country but also upon the white collar classes. Statistically something more than 50 per cent of the people are victimized by something less than 50 per cent. The advantages that are gained by certain groups of labor would be quickly lost if the remuneration of all workers, including the farmers, were advanced correspondingly. No group of workers can gain anything except at the expense of other groups. This ought to be so obvious as to require no further argument or explanation.

We think that we can discern signs of growing sanity among the Western farmers. The selfish politicians may preach to them about Government

loans to carry the wheat and about the Government buying the wheat, etc., as panaceas for their troubles, but many of the farmers are ceasing to be misled by such claptrap. They are beginning to perceive that the low prices for their products and the high costs for raising and carrying them are both associated with the continued disorganization of industry in Europe. They see, therefore, that their own welfare is not so independent of European welfare as some of the doctors have been teaching, and that the United States in some way must help Europe so that Europe can buy from us, which means, of course, that we must buy from Europe. American copper producers, cotton producers, petroleum producers and all the producers of raw materials whereof there is a surplus above the needs of domestic consumption see the thing in the same way.

If there be a shortage of labor in the United States, or, what is more probable, a disinclination of labor to work as hard as is needful, with the results of shortage of goods and consequently high prices, the natural economic solution is to let the people of foreign countries work for us. We need not fear competition of Europe in work that we can do better. Even in competitive manufacturing there is no use in struggling along if labor is going to exact all the profit. It may be anticipated that the next year or two will see a great change of mind about the tariff.

The Practical and the Spiritual

Two remarkable articles published in the *Atlantic Monthly* for August—one by Woodrow Wilson, ex-President and man of letters, and the other by Philip Cabot, a man of varied experience in banking and other business—emphasize impressively the necessity of spiritual development. The ex-President speaks of the solution of the problems of the nation and the preservation of civilization, while the Boston banker tells how he has found more vitality and power and a keener zest for life, but both argue that in the cultivation of the spiritual rather than in the pursuit of the material real life is found.

Newspaper comments have suggested that the

country is confronted by problems of immediate and concrete difficulties which can be dealt with only by practical and definite methods and that "sweet reasonableness and pious ejaculations" will not suffice. Of course, there must be definite applications of broad principles, but every man must do that largely according to his own ability and conscience.

Getting down to something very concrete and practical, we have before us the solution of the problems of the long day in the steel industry. This solution cannot be found in a way to insure permanent success by considering only costs and other material elements. A large consideration in the minds of the manufacturers who are now engaged in the great task of working out the change to the shorter day must be the welfare of the men, even when some of them are disposed to stand in their own light. If men have been on duty for such long hours that for a while they will not know how to spend their spare time wisely, that is not an argument against the shorter day. Rather it shows the importance of not only granting shorter working time but of helping the men to find ways to the best use of the spare time that will be theirs. In working out the plans there will arise questions which will require not only clear thinking but such a disposition to recognize the human side of the problem as shall make this great change a means to better working relations throughout the industry.

Payment by Results

In the first two years after the war, when labor unrest was particularly great, there was much talk about "piece work" or, to bring out the basic principle, payment by results. Of late the subject has received less attention, and this is unfortunate, for if even a small part of what was being said only three years ago is true, this is a problem that will recurrently force itself upon attention. Periodic neglect of such matters is natural. The same thing is to be observed in the matter of "the business cycle," which receives much attention when times are especially good or especially bad—notably the latter.

It would be quite unfair to assert that discussion of payment by results has ignored the human element, but it is probably true that the psychological aspect has been missed in many cases. Thus employers have been more inclined to propose piece work when there was much labor unrest than when there was little. The proposal then presents the appearance of being a compromise or surrender. When men are critical and filled with an exaggerated sense of their importance they are least disposed to work hard. From the business viewpoint that may be the time for a piece work plan, but from the psychological viewpoint it is not.

Many men are complaining of the ups and downs of commodity prices, giving at one time a sellers' market and at another time a buyers' market. The question is whether we really wish to mitigate this same tendency in the case of employment, so that employer and employee shall continuously have more balanced relations.

The vital fact must be kept in the forefront that the purely business and the purely psychological requirements in a system of payment by results cannot be met at the same time. They are divergent. To illustrate simply, assume that a fair earning is \$5 a day and a fair output is fifty pieces, making 10 cents apiece a fair remuneration, and that the cost to the employer of furnishing the facilities is \$5 a day, making total cost \$10 or 20 cents apiece on a 50-piece output. If simply the principle of the employer paying the employee for what the employer obtains were adopted, the payment would be \$4.80 for forty-nine pieces, \$5 for fifty pieces and \$5.20 for fifty-one pieces. There would be double penalty and double reward. The average employee would object to the one and might be suspicious of the other.

It is for such cases as these that the management needs to supply the arithmetic of simple shop cost calculations. It is possible that shops which have been preeminently successful in piecework operations have found it desirable to place on instruction cards, at least those for oft-repeated jobs, some explanation beyond merely stating what is the bonus for a performance better than the reasonable task, or the reduction, if any, for failure to meet it. A bit of mathematics outlining the reason for the bonus or penalty ought to dispel suspicion.

In the example suggested, the instruction card might say that the company can afford to pay \$10 a day for fifty pieces, \$5 to the workman and \$5 for the interest charges and upkeep of machine and factory space, including light, power and general overhead expenses. This actually means 20 cents outlay per piece. Then if the operator makes fifty-three pieces the factory can afford to pay \$10.60; reserving \$5 for itself, it can give the operator \$5.60. If only forty-seven pieces are made, the factory, though taking \$5, might still lose in that it is not getting full output and there would be left for the workman only \$4.40. Any measures calculated to help the worker to see the manufacturing problem of meeting competition are worth while, whether a piece rate system or any other basis of wage payment is involved.

Liberalizing Compensation

Workmen's compensation is again coming to the fore as a matter for consideration and amendment. Industrial legislation comes in waves, and it is compensation's turn. The tendency is to increase the benefits which accrue to injured workers under its operation, and a chief reason urged is that they should keep pace with the cost of living. While, of course, higher wage schedules automatically result in larger benefits, which are based upon the earnings of beneficiaries, immediately antedating the accident, it is now argued that this in itself is not a sufficient increase where disability is serious and protracted. Large employers of labor are inclined to see justice in this proposition.

Owners' interest in new legislation does not lie so much in keeping down total cost of this item of overhead as in the effort to have the

greater part of the increase go where they believe it will do the most good. They feel that those whose injuries cause absence for only short periods should not be considered so worthy of assistance as those whose injuries compel protracted idleness.

A recent amendment of the Massachusetts compensation act reduces the waiting period following an accident, before compensation begins, from ten to seven days. Other States have the same shorter period, so that the increased cost does not put Massachusetts manufacturers at a disadvantage in competition. It can be appreciated, however, that the new law increases considerably the direct cost of compensation as well as the overhead cost involved in keeping records for a much greater number of beneficiaries, all without any very material gain to them.

Based on the figures of accidents in Massachusetts industries in 1922, when the waiting period was ten days, 32,459 cases would be affected by the amendment, at an average cost of \$6.86, representing three days' compensation, making a total new cost of \$223,286. Moreover, it is estimated that the cost of administering the system is increased about an equal amount, not to speak of the tendency of idleness to increase. It is believed by those who have studied the workings of compensation that the shorter period stimulates malingering on the part of many who otherwise return to their work within ten days, but who would be tempted to take a few extra days if they were to receive compensation for the time.

Employers hold that if \$400,000 is to be added to the cost for compensation in Massachusetts it would be better to maintain a longer waiting period and spend the money for increased benefits for those who most need it, the victims of accidents which compel longer idleness, or, because of maiming, a change to minor employment, or for dependents in cases where death results. The number of serious cases is very small when compared with the total number of accidents. The \$400,000 of Massachusetts money would give substantial aid if distributed among the serious cases instead of being frittered away on the large number of short term cases.

Compensation agitation is not confined to the United States. The British Parliament is now considering a bill which would impose heavier burdens on industry in spite of the fact that the benefits, based on wartime conditions, are slightly reduced. Particularly objectionable is a provision that employers cannot plead that the accident was caused by the man acting in contravention to statutory or other regulations, or to specific orders given him by his employer, or that he took upon himself that which he had no business to do, providing it "was for the purpose of or in connection with his employer's trade or business." This, it is maintained, embraces practically every accident which might occur. The effect would be to nullify statutory regulations, the neglect of which now means accident without compensation.

The British bill looks to be a compromise. It

was deemed imperative to reduce the maximum amounts established under the exigencies of war time. However, the increased scope of liability is practically a return to the original British compensation act, under which even drunkenness was no bar to liability. There was the case of a sailor who went ashore from his ship. Returning to the dock very drunk, he boarded the vessel by a dangerous and forbidden passage, fell through a hatch into the hold and was badly injured. Compensation was allowed him. Plainly, if such cases are to be made subjects of legislative aid, the burden ought to be on the public and not on the individual or corporation that happens to be the employer.

Further testimony to the importance of chromium in industry is found in the work of the Bureau of Standards on the strength of steels at high temperatures. The second and concluding instalment of an article giving the results of an investigation of this subject appears on other pages of this issue. In a comparison made on the score of proportional limit, the authors find that the most striking feature observed is the predominance of steels containing chromium. "At 550 deg. C. five of the six steels showing the highest limit of proportionality contain chromium; two also contain molybdenum and additions of vanadium or uranium are each found in one case." As industrial processes, chemical and others, increase in scope and complexity, a demand is created for stronger metals at high temperatures. Chromium thus far has been the main reliance in meeting these conditions.

American Locomotive Co. Earnings

The American Locomotive Co. and subsidiaries report net profits for the first half of 1923 of \$7,917,125, after interest on bonds, etc., against \$2,267,259 for the six months ended Dec. 31 last. With taxes and preferred dividends deducted there remained \$6,097,125, equal to \$12.19 per share on the 500,000 shares of no par common. Surplus for the period, after reserving \$1,500,000 for additions and betterments, amounted to \$3,597,125. President Andrew Fletcher, in his statement to stockholders, said in part:

"The total unfilled orders on June 30, 1923, amounted to \$54,688,031, as compared with \$49,349,140 on Dec. 31, 1922. Domestic business at both periods represented about 99 per cent of the unfilled orders. The amount of unfilled business on hand June 30 is sufficient to keep the plants operating at full capacity for the remainder of the year."

Storage of Coal Being Studied

Steel mills are classed among the "preferential" industries in the storage of coal studies undertaken by the Federated American Engineering Societies in cooperation with the U. S. Coal Commission and the Department of Commerce. Electric railway, light and power, steam railways; smelters; railway equipment; electrical equipment; autos and accessories are industries also classed as preferential.

Foundries and machine shops and ship building are among the industries embraced in the study as "desirable."

More than 100 committees comprising 500 engineers are pursuing the inquiry, the aim of which is to aid in solving the nation's fuel problem. It is hoped to complete the coal storage study by fall.

Working on Abolition of the Long Day

Conferences of Iron and Steel Manufacturers Held in New York and Cleveland—Many Difficulties Presented, but Executives Determined and Will Proceed as Rapidly as Possible

THE past week has been one of conferences in New York and other cities in regard to the abolishing of the 12-hr. day in the steel industry. A meeting of the presidents of subsidiary companies was held Thursday at the office of Judge Gary, chairman United States Steel Corporation, and on the following day the directors of the American Iron and Steel Institute met. At both meetings methods of bringing about the change were considered, but no announcement was made except one of progress. It is expected that meetings will continue this week.

President Grace's Statement

"The shorter day is no longer an issue. The question now is how and when it shall be effected," Eugene G. Grace said last week during an interview in which he laid stress upon a point much neglected in newspaper discourses, namely, that the crux in making the change lies in the continuous operation departments.

As to how the change will be made, Mr. Grace said, "You can't take a man from the 12-hr. to the 8-hr. day and cut his pay in proportion to the hours. There must be a compromise to give him a chance, either on the tonnage basis or some other, to make something near his present earnings." It is well known that many steel workers prefer \$4.80 for the long day to \$3.20 for the short day. The Bethlehem organizations are now formulating plans to eliminate the long turn and, according to the president, expect "within a very short time to begin the actual rearrangement of forces. This will be accomplished with the employees a party to it through Bethlehem's employee representation system."

How soon the change will come is dependent solely upon the available labor. "If there were enough men to make three shifts, the change would be made tomorrow," Mr. Grace said. There will be some negro workers from the South and Mexicans from the border to help make the quota, but these will not come in large numbers. The hope of getting the full 60,000 required hangs on immigration legislation. Mr. Grace favors a "highly selective" immigration law which will admit a larger percentage of those who will make good citizens. In Bethlehem plants alone 2500 Mexicans have been employed during the last few months and they have proved satisfactory.

Mr. Grace added: "We said that we would change to the shorter day, and we will."

Employee Representation

President Grace made a statement sketching in brief the results of the employee representation system as described fully in THE IRON AGE of June 14 by John Calder, consulting engineer, Lexington, Mass.

Conference Held in Cleveland

CLEVELAND, July 30.—Some of the operating heads of Cleveland steel plants held a conference during the week with steel plant officials in Youngstown in regard to the adoption of the 8-hr. day. As yet no definite steps have been taken in this territory and it is generally felt by independent producers that steel companies must all work together in bringing about the shorter day.

The Upson Nut plant of the Bourne-Fuller Co. was placed on an 8-hr. day several years ago. Outside of the American Steel & Wire Co.'s plants only two local steel companies will be affected by the adoption of the shorter working hours, these being the McKinney Steel Co. and the Otis Steel Co. At the McKinney plant the 12-hr. day is in force only in departments where the

operations are continuous, which includes the open-hearth, blast furnace and coke oven departments. The Otis Steel Co. is operating on a 12-hr. basis in its blast furnace and coke departments, but is operating all its mills, as well as its open-hearth furnaces at its Lakeside plant, on an 8-hr. schedule. This company will start up the new open-hearth plant at its Riverside works in a few months and probably developments in the meantime in the shorter hour movement will lead to a decision as to whether it will place this plant on an 8-hr. or 12-hr. day.

Making Progress at Youngstown

YOUNGSTOWN, July 31.—Institution of the 8-hr. day in the steel plants of the country will not be a simple matter. In fact, it presents difficulties which are easily overlooked by the layman. Its further introduction is more likely to be a gradual process, rather than a somewhat sudden change. Two of the principal factors entering into the situation at present are the lack of adequate labor supply and the disinclination of many workers, particularly the foreign-born, to have their wages reduced, even as a partial offset to the cut in their hours of work.

In the Mahoning Valley the shorter workday is more generally in effect at the plants of the Trumbull Steel Co. at Warren than at any other property. There is no particular significance to this situation, however, as the Trumbull company employs many sheet and tin plate workers, who are generally on an 8-hr. basis. The company, however, was among the first to adopt the 8-hr. day in its open-hearth department, where it has been in effect for several years.

The majority of employees of the Trumbull company are on the short-turn basis. The abolition of the 12-hr. day by this company came by degrees and was accompanied by no unusual circumstances. There were no wholesale or revolutionary changes.

Youngstown Sheet & Tube Co. Plans

"In considering the 8-hr. day it is necessary for us to do the right thing first by our men," observes President James A. Campbell of the Youngstown Sheet & Tube Co.; "secondly, by our stockholders, and, third, by the public. Many people believe it is comparatively easy and simple to establish the shorter day. But the problem is really a difficult one. The three principles I have laid down must be observed and everybody must be satisfied. The change is really a revolution in the steel industry and must be considered in all of its angles before it is actually accomplished."

It was the plan of the Sheet & Tube company to begin the introduction of the shorter day about Aug. 1, but it is apparent that little progress will be made in reducing working hours at this time. In fact, independent interests as a general rule are awaiting the action of the United States Steel Corporation on this subject. In the matter of introducing the shorter day, as in the matter of wages, the action of the leading interest may be expected to prove a dominating influence. As competitors in the steel markets, they cannot pay higher wage rates than the Steel Corporation, and as competitors for labor supply, it is unlikely they can be less generous than the principal employer.

"We hoped to make a start toward the expansion of the shorter day on Aug. 1," states Mr. Campbell, "but the difficulties are so many and so hard to solve that it will take longer to decide on a definite plan. The steel industry is one of the most keenly competitive in the country and no one concern can afford to make the change much in advance of its competitors."

The larger independents are conducting surveys of

their properties, determining how different departments will be manned under the new arrangements.

Eight-Hour Turns with Eight Hours Pay

During the summer there has been considerable shifting in the plants of the Sheet & Tube and the Republic Iron & Steel companies, affecting chiefly the higher-priced men. For instance, some of the 12-hr. men at the blooming mill of the Republic company were recently put on an 8-hr. basis. Those affected were blooming mill heaters, pit crane and stripping crane operators. In no case was the wage rate per hour or the rate per ton affected. In other words, men previously working 12 hr. and reduced to 8 hr. were paid for 8 hr. on the same hourly basis, or at the same tonnage rates, which they had previously received for 12 hr.

Most of the men affected were American workers. The changes were originally made by the Sheet & Tube company, and when employees doing similar work at the Republic plant learned of this, they made request for the same reduction in their working hours, even though it involved a substantial reduction in compensation. "The change was not made voluntarily on our part," says an official of the Republic company, "but at the request of the men."

In some cases the reduction in compensation, where the men were paid the tonnage rates, amounted to as much as \$80 and \$90 per month. The great majority of the American workmen prefer the shorter day, and at the same time are seeking steady employment.

Ten-Hour Rolling Mill Turns

In some rolling mills of independent plants in the Youngstown district men now work 10½ hr. on the day shift and 13½ hr. on the night shift. It is proposed to change this arrangement to two 10-hr. shifts, and close down the departments for four hours, during which repairs may be made, or rolls changed, etc.

It is generally conceded that the 12-hr. day is doomed, but this does not necessarily mean a universal 8-hr. day. It means rather establishment of 8-hr.

shifts where continuous operations are necessary, and 10-hr. shifts in most other departments. The highest number of hours which any men will work when the changes become effective will be 60 hr. per week, and the smallest, 44, with most of the men averaging 55 hr.

Wage adjustments, it is felt, will be inevitable, and it is regarded as certain that the men will be obliged to accept a reduction in the amount of pay they receive for the shorter day. Cost of production will be advanced.

Labor Supply in the Coming Winter

In some quarters the problem of labor supply is not regarded so seriously as in others. For instance, it is pointed out that, in a five or ten-year period, plants in the Youngstown district do not average more than 70 per cent. Operations the past four months have been above average, as a result of which there has been a considerable influx of workmen into the district, though the number has been insufficient to meet the requirements.

Industrial leaders do not anticipate that operations during the winter will average above 75 per cent. With the decrease in operating schedules the additional workers brought into the district will be available for establishing the shorter workday. It will also mean adjustments and changes in the supervising forces. More foremen will be needed, and there will be advancement for many of the older employees, who will become key men on the shift that is to be added.

Steel men are almost unanimous in saying that production costs will increase, the estimates varying from \$3 per ton of steel, made by Mr. Campbell, to \$4 and \$4.50 per ton, suggested by others. As operations are now largely mechanical, production will not be increased by having three shifts instead of two.

In rolling mill departments, where men are paid on a tonnage basis, no great loss in production is expected, as it has been the experience that men paid on a piece or tonnage basis will try and earn as much in 10 hr. as in 12 hr. This was demonstrated when the Sheet & Tube company changed from 12-hr. night shifts to 10-hr. night shifts in its tube mills.

Judge Gary Indorses Prohibition and Opposes Modification of the Law

Prohibition has been of incalculable benefit to the workers in American industry, particularly those in the steel industry, and their families, Judge Elbert H. Gary, chairman of the board of the United States Steel Corporation, Monday declared in an interview for *The New York Times*.

According to Judge Gary, the effects of prohibition, despite the admitted violations of law in the large cities, have included a decrease in the consumption of intoxicating liquor, a decrease in crime and poverty, an increase in the health of the workers and their families and their savings deposits.

These advantages to the workers have been coupled with an improvement in the working ability and disposition of the employees, according to Judge Gary. Even without the material and moral advantages to its employees, Judge Gary said the Steel Corporation would be for prohibition, because it pays.

Judge Gary declared himself against any modification of the prohibition laws. He added:

"While there have been violations of these laws, particularly in the larger cities; while there has been illicit manufacture of 'hooch,' so-called, and while there has been more or less bootlegging, yet as a total result of the prohibitory laws there has been a large decrease in the use of liquor, at least in the vicinity of our various plants throughout the country.

"There has been a decrease in the number of inmates of jails, asylums and hospitals. There has been an increase, and a large increase, in the bank balances of savings deposits. The health of the people has improved. The families of workmen are better clothed

and better treated. The attendance of the workmen and their families at church, of the children in schools and of all of them at clean, legitimate, healthful resorts and places of amusement, has materially increased."

Steel Production Well Maintained

YOUNGSTOWN, July 31.—In contrast with the decline in furnace output, steel production continues with little diminution. The independents are maintaining an average of 45 open-hearth furnaces, of 51, on the active list.

Sheet output shows considerable decline this week, due to slackening requirements. Of the 117 independent sheet mills in the Mahoning Valley, 89 were scheduled to resume early in the week, the lowest number in many months, excepting the suspensions for repairs around July 1.

Individual schedules call for operation of sheet mills as follows: Youngstown Sheet & Tube Co., 30 of 42 mills; 17 of the 17 mills of the Newton Steel Co. (three additional mills are now being completed); 15 of the complement of 15 in the group of the Trumbull Steel Co.; eight of the 18 mills at Niles of the Republic company; seven of the nine mills of the Sharon Steel Hoop Co.; five of the eight units of the Falcon Steel Co. and seven of the eight Mahoning Valley Steel Co. mills.

The Falcon Tin Plate Co. is operating seven of its nine mills at the Canton property. The Trumbull Steel Co. has 23 tin mills scheduled this week.

The conduit department of the Sheet & Tube company at its Struthers plant has been suspended.

Plate, skelp and bar mills continue with little change in schedules.

BLAST FURNACES STOPPING

Twenty-three Now Idle in the Pittsburgh and Adjoining Districts

PITTSBURGH, July 31.—In a special summary detailing the furnaces in and out of blast, THE IRON AGE under date of May 21 last noted as active a total of 126 out of 138 furnaces in the triangle bounded by Johnstown, Pa., on the east, Wheeling, W. Va., on the south, and Warren, Ohio on the north. It was then stated that the above total probably marked the high peak of blast furnace activities for this year since four or five of the furnaces were in blast chiefly because the then existing prices permitted profitable liquidation of ore stocks. Since July 1 most of these furnaces have quit and there have been several other suspensions because of the decline in the prices of pig iron on the one hand and because a lighter demand for finished steel has rendered unnecessary the production of pig iron on the scale of the early part of the year. As of today, 115 furnaces are active, 22 are cold and one furnace is banked. This is at variance with recent daily newspaper statements that 30 furnaces have gone out. As will be seen, 12 furnaces have not been in operation at any time on the present movement, so that only 10 have blown out since the peak in May. We present herewith a table giving the present standing of the furnaces in the territory indicated:

PITTSBURGH DISTRICT					
Steel Works Blast Furnaces					
	Total	July 31		May 21	
		In	Out	In	Out
American Steel & Wire Co.....	4	4	0	4	0
Carnegie Steel Co.....	34	30	4	33	1
Pittsburgh Crucible Steel Co.....	2	2	0	2	0
Jones & Laughlin Steel Corporation	12	11	1	12	0
National Tube Co.....	4	4	0	4	0
Pittsburgh Steel Co.....	2	2	0	2	0
Merchant Furnaces					
Clinton Iron & Steel Co.....	1	1	0	1	0
Total	59	54	5	58	1
MAHONING AND SHENANGO VALLEYS					
Steel Works Furnaces					
Carnegie Steel Co.....	15	12	3	15	0
Republic Iron & Steel Co.....	7	5	2	6	1
Sharon Steel Hoop Co.....	1	1	0	1	0
Trumbull Cliffs Furnace Co.....	1	1	0	1	0
Youngstown Sheet & Tube Co.....	9	8	1	9	0
Merchant Furnaces					
A. M. Byers Co.....	1	1	0	1	0
Hanna Furnace Co.....	3	2	1	3	0
Reliance Coke & Furnace Co.....	2	1	1	2	0
McKeefrey Iron Co.....	1	1	0	0	1
Sharpsville Furnace Co.....	1	1	0	0	1
Shenango Furnace Co.....	3	*2	1	2	1
Struthers Furnace Co.....	1	1	0	1	0
Stewart Furnace Co.....	1	1	0	1	0
Valley Mold & Iron Corporation..	1	0	1	0	1
Total	47	37	10	42	5
WESTERN PENNSYLVANIA					
Steel Works Furnaces					
Cambria Steel Co.....	11	9	2	9	2
Merchant Furnaces					
American Manganese Mfg. Co.....	2	1	1	1	1
Kittanning Iron & Steel Mfg. Co..	1	0	1	1	0
McKinney Steel Co.....	3	3	0	2	0
Total	17	13	4	14	3
WHEELING DISTRICT					
Steel Works Furnaces					
Carnegie Steel Co.....	7	5	2	5	2
National Tube Co.....	2	2	0	2	0
Wheeling Steel Corporation.....	5	4	1	4	1
Weirton Steel Co.....	1	1	0	1	0
Total	15	12	3	12	3
Grand Total	138	116	22	126	12

*One furnace banked.

YOUNGSTOWN, July 31.—With the exception of re-eding iron output, due to slack in demand for pig iron, production schedules of steel companies are holding up well. No. 3 blast furnace in the Hazelton group of the Republic Iron & Steel Co. is scheduled for suspension at an early date for relining, contract for the work having already been awarded. In the Mahoning Valley, the idle furnaces include D stack at East Youngstown, of the Youngstown Sheet & Tube Co., suspended for relining; the detached Hannah furnace of the Republic company, and the detached Thomas

stack at Niles, Trumbull County, of the Carnegie Steel Co. Otherwise all blast furnaces, both steel company and merchant stacks, are in action.

In the Shenango Valley, 13 of 20 furnaces are operating. The Atlantic stack at New Castle of the Republic company is idle, as well as the Sharon, Pa., furnace of the Carnegie Steel Co. Otherwise the inactive blast furnaces in the Shenango Valley are merchant stacks.

Plans for Vocational Shops in Baltimore Schools

Plans are being made by the Board of Education, Baltimore, for the installation of elaborate vocational shops in four of the large high schools now under construction or which are to be started soon. Considerable equipment, such as small machine tools, woodworking machinery, electric shop equipment, etc., will be installed. Charles W. Sylvester, director of vocational training, Administration Building, Madison and Lafayette Avenues, Baltimore, wants catalogs and data on the equipment which will be needed.

There also are six elementary schools under construction or about to be started. These are to contain woodworking shops only.

The Forest Park Junior-Senior High School, which is under construction, is to have the largest shops. There will be four mechanical drafting rooms, machine, electric, sheet metal, automobile, two woodworking and printing shops. The shop building will be separate from the main school building. The Clifton Park Junior High School, also under construction, will have woodworking, machine, electric and sheet metal shops and two drafting rooms.

Work has not been started as yet on the Southwestern Junior High School. This building will contain a combination machine and automobile shop, sheet metal, electric and woodworking shops. The Colored Junior-Senior High School, upon which work has been started, will have a separate building for the shops. An old building will be remodeled at a cost of about \$100,000 for this purpose. It will include machine, automobile, woodworking, electric, sheet metal and printing shops.

The machinery which will be installed is to be of a variety of makes, according to Mr. Sylvester, in order to give the students training on more than one kind.

In addition to the many schools where pre-vocational training is given and those planned the school officials of Baltimore also operate the Carroll Vocational School. This contains machine, automobile, pattern, electric and printing shops. This school is operated on a 6-hr. day basis, the students spending half of the time in shop work and the other half in related subjects and general education.

Southern Traffic League Favors General Rate Investigation

WASHINGTON, July 31.—Informal application was made last week to the Interstate Commerce Commission by the Southern Traffic League for a general investigation into the commodity rate situation in Southern territory. Particular concern was shown with respect to commodity rates that were permitted to become operative July 1, despite numerous protests from organizations of shippers who showed concern over the action of the commission in permitting application of the rates because of what they considered would be its effect on the existing class rate investigation. The commission, however, after refusing to suspend the rates, gave out a statement which was designed to assure shippers that the apprehension shown was not justified.

Iron and steel producers in western Pennsylvania and in Ohio made particularly strong protest against increased rates on their manufactures. Some shippers are inclined to make formal complaint about the rate situation developed as the result of the failure of the commission to suspend the rates.

EXPORT MARKET QUIET

Japan Buys British Tin Plate and Inquires for More—British Cotton Ties Imported

NEW YORK, July 31.—The quietness in export trade continues as far as iron and steel are concerned, but there has been a fair degree of activity in inquiries for electric cranes from Japan and China. Cuban buyers have been inquiring for iron and steel and South American markets continue active on small lots of wire, galvanized sheets, nails, etc. Chinese merchants are actively buying wire shorts at about \$49 per ton, f.a.s., American port, and continue willing to consider quotations on second-hand plates but are not inclined to go above \$28 to \$30 per ton, c.i.f. China, on this latter material. Galvanized sheets, wire and tin plate are extremely quiet in the Chinese market. The total world buying is not large and Great Britain is getting most of the orders at prices sometimes \$8 and \$10 below American quotations.

Japanese merchant buyers are inquiring for black sheets of light gage, inquiries generally being for 50 or 100 tons, and a few for 300 tons, but activity seems to be entirely confined to obtaining prices. There has been some purchasing of wire rods and a few sales of light gage wire are reported. In tin plate, the Nippon Oil Co. is again in the market, this time for 19,000 boxes, bids opening Aug. 1. The previous contract for 18,000 boxes was placed by a Japanese export and import house with Richard Thomas & Co., Ltd., Abercarn, Monmouthshire, England. This is believed to be the

first tin plate tonnage of the Nippon Oil Co. placed with a British seller this year.

British sellers of cotton ties are evidently disposing of a fairly large tonnage in the United States, to a certain extent supplanting the German competition which usually occurs, but which has been eliminated this year as a result of political conditions in Europe. One importer of cotton ties mentions the arrival of 100,000 bundles of British ties and a Texas company is reported to have purchased a total of 80,000 bundles at between \$1.60 and \$1.65 per bundle, although the price generally quoted for British cotton ties is about \$1.80 per bundle, c.i.f. Atlantic port, duty paid and loaded on cars.

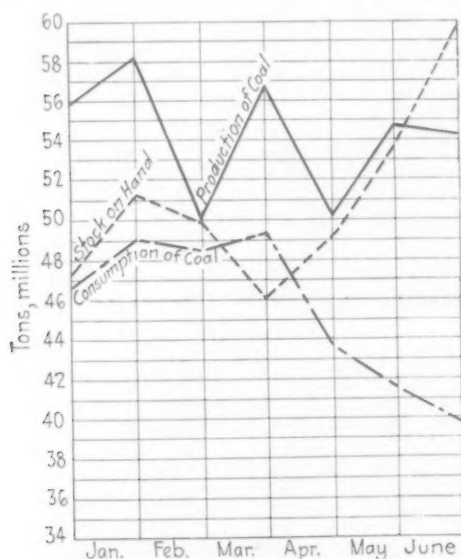
While reports of Belgian competition in foreign markets continue, the low-priced business actually transacted is believed by some importers and exporters to be somewhat exaggerated. Although a price of \$36 per ton, f.o.b. Antwerp, was recently quoted as the Belgian export price for rails, an importer in New York who forwarded an inquiry for 1000 tons of 65-lb. rails to three of the largest Belgian rail mills received a quotation from only one and this was \$46 per ton, c.i.f. American port.

Scotch foundry iron is said by importers to be completely out of reach for importation into the United States at present. Continental iron is also above the present domestic market. One importer reports a recent quotation of \$28.50 per ton, c.i.f. New York, Philadelphia or Boston, on French foundry iron, less than 1 per cent phosphorus and either 2.25 to 2.75 per cent silicon or 2.75 to 3.25 per cent.

LESS COAL BURNED

Consumption of Both Hard and Soft Grades Declined in June

The most recent data on coal collected by the National Association of Purchasing Agents show that during the month of June the industrial consumption of hard and soft coal in the United States and Canada was approximately 1,812,000 tons less than during the month of May. The association's report says: "As



Coal Production, Consumption and Stocks in First Six Months of 1923

these figures are based entirely on the industrial consumption of coal, they reflect a further decrease in business of 4.3 per cent during the month of June. For the month of May we recorded a decrease in business of 5 per cent and for the month of April a decrease of 10 per cent. During the first quarter we recorded an increase in business of 9.63 per cent and for the second quarter a decrease of approximately 15¼ per cent.

"Inasmuch as our chart reflects a further decrease in business, it should be stated that the coal consumption of some branches and lines of business for June indicated no further dropping off in the volume of business, also that the coal consumption of a considerable number showed an increase, but the larger percentage showed further declines and on the whole or in general there was a decrease of 4.3 per cent. This would indicate that the downward trend is about at an end and that no further decrease in business will be registered for July and that there is a possibility that the upward swing will begin with the month of August.

"The stocks of hard and soft coal in commercial consumers' bins on July 1 were 6,053,200 tons greater than on June 1. Expressed in number of days, the supply on July 1, based on the June consumption, was sufficient to meet the industrial requirements of the United States and Canada for a period of 45 days, based on the March, April and May consumption, we had in storage on July 1 sufficient for approximately 41 days.

"The estimated total production of hard and soft coal in the United States during the month of June was about 426,000 tons less than during the month of May."

	Stocks on Hand	Net Tons
May 1, 1923.....		49,022,000
June 1, 1923.....		53,669,800
July 1, 1923.....		59,723,000

	Consumption
Month of April.....	43,659,000
Month of May.....	41,532,000
Month of June.....	39,272,000

	Production
Month of April.....	50,209,000
Month of May.....	54,735,000
Month of June.....	54,309,000

(Of the June production 45,644,000 tons was soft coal and 8,665,000 tons was hard coal.)

Figures of the Bureau of the Census, Washington, show that 196,267 establishments engaged in manufacturing in 1921 made goods to the value of \$43,653,283,000, compared with \$62,041,795,000 from 214,383 establishments in 1919. Wage earners in 1921 were 6,946,564, and wages amounted to \$8,200,324,000, or \$1,180 per person. These figures compare with 9,000,059 and \$10,461,797,000 and \$1,162 in 1919. The 6,896,190 wage earners in 1914 received only \$4,067,719,000, or \$590 per person, exactly one-half of the 1921 average wage.

PIG IRON OUTPUT DOWN

**July Total 3,679,810 Tons—Loss of 25
Furnaces**

**Curtailment Movement Well Under Way, In-
cluding 9 Merchant Stacks**

Through the excellent cooperation of the operating companies, acknowledgment of which is hereby made, THE IRON AGE is able to present in this issue a close approximation to the pig iron output of July. There is so much interest throughout the iron trade in the present relation of supply and demand that the effort was made to compile the July statistics and go to press with them on the evening of July 31. This involved the telegraphing of returns from all the furnaces in blast, and the producers were asked to estimate the production of the final day. The response has been most gratifying and it is safe to say that the figures compiled will show no material divergence from the final tabulation which will be presented next week. For only seven furnaces out of the total number producing pig iron in July was it necessary to make estimates in this office because of the non-receipt of telegraphic advices up to the hour of going to press.

The estimated production for the 31 days of July is 3,679,810 gross tons, or 118,703 tons a day, as against 3,668,413 tons in the 30 days of June, or 122,280 tons a day.

That the curtailment movement referred to in these columns two weeks ago is well under way appears from the blowing out or banking of 27 furnaces in the past month. Two furnaces were blown in in July, making the net loss 25. Thus there are in blast at the beginning of August 297 furnaces, against 322 furnaces one month previous. Of the furnaces blown out or banked in July 18 were steel works furnaces and 9 were merchant furnaces. Such a reduction in the pig iron output of the steel companies points also to a considerable cut-

ting down of steel ingot production in the month just ended.

The estimated production of ferromanganese in July was 26,231 tons, or the largest for any month this year, the average for the first six months having been about 20,000 tons per month. The spiegeleisen output in July was about 12,850 tons, which compares with an average of 10,000 tons per month for the first six months.

Furnaces In and Out

Among the furnaces blown in during July was the Oriskany furnace of the Lavino Furnace Co. at Reusens, Va., and the Standard furnace in Tennessee, which had been banked late in June.

Among the furnaces blown out or banked in July were the following: One Wharton furnace of the Replogle Steel Co. in New Jersey; C furnace of the Bethlehem Steel Co. in the Lehigh Valley; one Lucy, one Isabella and the Edith furnace of the Carnegie Steel Co. and No. 1 Alliquippa furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; No. 4 New Castle furnace and the Sharon furnace of the Carnegie Steel Co., one Shenango furnace of the Shenango Furnace Co. and the Fannie furnace in the Shenango Valley; one furnace of the Virginia Iron, Coal & Coke Co. in Virginia; one Youngstown and one Brier Hill furnace of the Youngstown Sheet & Tube Co. and the Niles furnace of the Carnegie Steel Co. in the Mahoning Valley; one River furnace in northern Ohio; the Milton furnace and one furnace of the Marting Iron & Steel Co. in the Hanging Rock district, as well as the Hamilton furnace in southern Ohio; one Joliet and one South Chicago of the Illinois Steel Co. in Illinois; one Mayville furnace in Wisconsin; two furnaces of the Colorado Fuel & Iron Co. in Colorado; the Philadelphia furnace of the Sloss-Sheffield Steel & Iron Co. and the second Oxmoor furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama as well as the Rockdale and the second Allen's Creek furnace in Tennessee.

Official Report of the Tenth National Foreign Trade Convention

Less in bulk than most of its predecessors, the report of the Tenth National Foreign Trade Convention, held in New Orleans, May 2-5, 1923, represents the seasoning process that has made these annual conventions more and more practical year by year. Then, too, the discussions of four and a half years since the armistice had left less to say on the problems of Europe and their relation to our export trade. What was traversed at the meeting of 1919-22 in a series of addresses from bankers, publicists, shipping men and large exporters was represented at New Orleans in the "Report on European Conditions," submitted on the first day by a special committee of the National Foreign Trade Council. Taking for its text the summary of the report laid before the International Chamber of Commerce at Rome—largely the work of the American delegation—the special committee analyzed in an admirable way the European situation, and its deliverance is one of the outstanding features of the volume before us. Following it is a ten-page paper by Prof. Jeremiah W. Jenks on "European Progress During the Last Year"—an optimistic view based on the observations of a trip of several weeks through central Europe.

A thorough-going study of "The Shipping Situation of the World," by President James A. Farrell of the Steel Corporation, was a feature of the meeting and is one of the most valuable addresses in the volume. Mr. Farrell takes a broader view of the shipping question than is commonly presented in the sharp drawing of lines between subsidy and anti-subsidy partisans.

He would have our Government develop friendly relations with the maritime nations of the world with respect to shipping. In a word, his program is cooperation at home and friendly relations with international shipping.

A good deal was said at the convention about the financing of foreign trade, and in connection with the discussion of foreign credits a novel convention episode was the putting on of a playlet illustrating the right way and the wrong way of running the credit office in connection with export trade. A second playlet had for its motif the helpful function of a banking house in making up for the inexperience of merchants who at times rush into the export business as opportunists. The South American market comes in for considerable attention in this connection.

The volume emphasizes again the capable direction the work of the National Foreign Trade Council has had under the administration of Secretary Davis.

The Maryland Public Utilities Association, which was formed several months ago, held a meeting on July 26 at the State House, Annapolis, at which addresses were made by Governor Albert C. Ritchie, William Milnes Maloy, chairman of the Public Service Commission, and several members of the association. Representatives of more than 50 public utilities companies of the State were present. The executive committee decided upon a sliding scale for the dues, from \$10 for the companies whose gross earnings were under \$10,000, to \$700 for those whose earnings were more than \$5,000,000. It also was decided to have permanent quarters at the Engineers' Club, Baltimore.

Iron and Steel Markets

FURNACES BLOWING OUT

Net Loss of Twenty-five in July

Further Curtailment Coming—Oil Industry a Large Buyer of Finished Steel

That pig-iron production is being sharply curtailed appears from the July statistics which THE IRON AGE has gathered by wire on the last day of the month. Still other furnaces are scheduled for blowing out in August.

Along with this movement, which will tend to check the three months' decline in pig-iron prices, though it has not yet done so, there is a fair increase in activity in finished steel, but with little change from the policy of buying in small lots which has been followed for some weeks.

On direct returns from all but seven out of 322 blast furnaces, the estimated pig-iron output for the 31 days of July is 3,679,810 tons, or 118,703 tons a day, against 3,668,413 tons for the 30 days of June, or 122,280 tons a day.

Of the 27 furnaces shut down in July, 18 were steel company and 9 merchant furnaces. Many went out late in the month, so that the July figures reflect only in part the loss of this capacity. Only two furnaces blew in last month.

The 297 furnaces in blast Aug. 1 had an estimated capacity of 114,500 tons a day, against 125,000 tons a day for the 322 furnaces active on July 1—the loss being over 8 per cent.

Prices for finished steel continue to mark the diverse influences affecting pig-iron and rolled products. Deliveries can be made in shorter times, but replenishment orders are more numerous and the marked infrequency of suspensions and cancellations testifies to the large volume of consumption, in spite of the moderate slowing down in production. It is still true that the test of prices is yet to come.

The Steel Corporation's second quarter earnings confirm the production records showing May as the peak month, as higher priced bookings were reached. The slight falling off in June was somewhat accentuated in July.

Pittsburgh mills have found plates, strips and tin plate the lines in which order books have held up best of late. The Pacific Coast and Hawaii will require food containers beyond early estimates.

Specifications for cotton ties indicate an increase over the early season estimates of requirements.

The oil industry has contributed largely to the week's business. Sixty tanks bought for the Sinclair company will take 18,000 tons of steel and those for three other companies 3350 tons. A Pittsburgh independent pipe maker will supply 25

miles of 6-in. pipe in Louisiana for the Atlantic Refining Co.

About 7500 tons of fabricated steel building work was purchased for public, public service and private uses. Of 21,000 tons of fresh inquiries, 16,000 tons was for private enterprises.

Buying of pig iron in the East has been active, especially in the Philadelphia district, where it is estimated sales of foundry iron for July amounted to 125,000 tons. The Pittsburgh market also shows greater activity and for the most part price recessions seem to have been checked, but quotations are down 50c. at Chicago and in the South \$24 has become the ruling price. A round tonnage of basic has been sold by a middleman on a \$24 basis, Youngstown, but furnaces are still holding this grade at \$25.

In a generally dull export market the lively race in Germany between the falling of mark exchange and the boosting of prices appears to have only academic interest, even though the net result is that pig iron is only one-half its equivalent here and bars and sheets only one-third.

England lately has been making the sales. Japan and Cuba have obtained sheets at levels fully \$8 below the American quotations and India has taken some 20,000 tons. Now sheets have been advanced in the British market, though other changes are downward. The Nippon Oil Co. ordered 18,000 boxes of tin plate of a British maker and now is in the market for 19,000 boxes. Great Britain has supplanted Germany in getting American cotton tie business.

British shipbuilding during July was the lowest (except for April, 1922) in 40 years. Continuance of the boilermakers' strike has caused two more shipyards at Stockton to close.

THE IRON AGE pig iron composite price is now \$25.38, compared with \$25.68 last week. Eleven weeks of the past twelve have shown a decline, the figure now being \$5.41 below that of early May.

Finished steel, according to THE IRON AGE composite price, remains at 2.775c. per lb. The present price is less than 2 per cent below the highest of the past 29 months.

Pittsburgh

Basic Pig Iron Sold by a Middle Interest—Steel Prices Hold

PITTSBURGH, July 31.—Steel market characteristics are very much the same as they have been the past few weeks. Inquiries are fairly numerous, but they run individually to small tonnages and in all cases are for fairly prompt delivery. There is still a substantial gap between the shipments on old orders and strictly new business, although there are estimates that in some products new business taken during the month of July reached 80 per cent of shipments. This was the case with one local maker of strips, and there has been such a persistent demand for plates that it is probable that new business and completed orders lately have been fairly close in that product. Tin

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 31, 1923	July 24, 1923	July 2, 1923	Aug. 1, 1922
No. 2X, Philadelphia...	\$26.26	\$26.56	\$29.76	\$29.76
No. 2, Valley furnace...	25.00	25.00	26.50	28.00
No. 2, Southern, Cin'ti...	28.05	29.05	29.05	22.55
No. 2, Birmingham, Ala...	24.00	25.00	25.00	18.50
No. 2 foundry, Chicago...	27.00	27.50	29.00	26.00
Basic, del'd, eastern Pa...	25.50	25.50	28.00	27.25
Basic, Valley furnace...	25.00	25.00	25.50	25.00
Valley Bessemer, del P'gh.	28.26	28.26	29.26	26.76
Malleable, Chicago...	27.00	27.50	29.00	26.00
Malleable, Valley...	24.50	24.50	26.50	27.00
Gray forge, Pittsburgh...	26.26	26.26	27.76	27.76
L. S. charcoal, Chicago...	32.15	32.15	36.65	33.15
Ferromanganese, furnace...	117.15	117.15	125.00	67.50

Rails, Billets, Etc., Per Gross Ton:	July 31, 1923	July 24, 1923	July 2, 1923	Aug. 1, 1922
O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$40.00
Bess. billets, Pittsburgh...	42.50	42.50	42.50	35.00
O.-h. billets, Pittsburgh...	42.50	42.50	42.50	35.00
O.-h. sheet bars, P'gh...	42.50	42.50	42.50	35.00
Forging billets, base, P'gh.	47.50	47.50	47.50	40.00
O.-h. billets, Phila...	47.67	47.67	47.67	40.17
Wire rods, Pittsburgh...	51.00	51.00	51.00	40.00
Skelp, gr. steel, P'gh, lb...	2.40	2.40	2.45	1.70
Light rails at mill...	2.25	2.25	2.25	1.75

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.67	2.67	2.72	2.025
Iron bars, Chicago...	2.50	2.50	2.50	2.00
Steel bars, Pittsburgh...	2.40	2.40	2.40	1.70
Steel bars, Chicago...	2.60	2.60	2.60	1.75
Steel bars, New York...	2.74	2.74	2.74	2.04
Tank plates, Pittsburgh...	2.50	2.50	2.50	1.70
Tank plates, Chicago...	2.80	2.80	2.80	1.75
Tank plates, New York...	2.84	2.84	2.84	2.04
Beams, Pittsburgh...	2.50	2.50	2.50	1.70
Beams, Chicago...	2.70	2.70	2.70	1.75
Beams, New York...	2.84	2.84	2.84	2.04
Steel hoops, Pittsburgh...	3.15	3.15	3.30	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
 †Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	July 31, 1923	July 24, 1923	July 2, 1923	Aug. 1, 1922
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheet, black, No. 28, P'gh.	3.75	3.75	3.85	3.15
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.00	4.15
Sheets, blue an'd, 9 & 10	3.00	3.00	3.00	2.40
Wire nails, Pittsburgh...	3.00	3.00	3.00	2.40
Plain wire, Pittsburgh...	2.75	2.75	2.75	2.25
Barbed wire, galv., P'gh...	3.80	3.80	3.80	3.05
Tin plate, 100-lb. box, P'gh.	\$5.50	\$5.50	\$5.50	\$4.75

Old Material, Per Gross Ton:

Carwheels, Chicago...	\$20.00	\$20.50	\$21.00	\$19.50
Carwheels, Philadelphia...	20.00	20.00	22.00	17.50
Heavy steel scrap, P'gh...	17.00	17.00	20.00	17.00
Heavy steel scrap, Phila...	16.00	16.00	17.50	15.00
Heavy steel scrap, Ch'go...	16.50	17.00	17.25	15.50
No. 1 cast, Pittsburgh...	20.00	20.50	22.50	19.00
No. 1 cast, Philadelphia...	20.00	20.00	21.00	18.00
No. 1 cast, Ch'go. (net ton)	18.50	18.50	21.50	17.00
No. 1 RR. wrot. Phila...	18.00	18.00	21.00	17.50
No. 1 RR. wrot. Ch'go. (net)	14.00	14.50	15.00	14.25

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt...	\$4.25	\$4.50	\$4.75	\$14.00
Foundry coke, prompt...	5.25	5.25	5.50	14.50

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.87 1/2	15.00	15.00	14.12 1/2
Electrolytic copper, refinery	14.37 1/2	14.50	14.50	13.75
Zinc, St. Louis...	6.30	6.10	5.75	6.25
Zinc, New York...	6.05	6.45	6.10	6.60
Lead, St. Louis...	6.05	6.10	6.55	5.47 1/2
Lead, New York...	6.75	6.25	6.85	5.80
Tin (Straits), New York...	38.75	39.62 1/2	38.50	32.75
Antimony (Asiatic), N. Y.	7.70	7.00	6.95	5.25

Composite Price July 31, 1923, Finished Steel, 2.775c. Per lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	July 24, 1923, 2.775c. July 2, 1923, 2.789c. Aug. 1, 1922, 2.169c. 10-year pre-war average, 1.689c.
These products constitute 88 per cent of the United States output of finished steel	

Composite Price July 31, 1923, Pig Iron, \$25.38 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	July 24, 1923, \$25.68 July 2, 1923, 26.79 Aug. 1, 1922, 24.38 10-year pre-war average, 15.72
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plate makers are specified fully against production for the next 60 days, but in all other finished products, judging by the promptness with which deliveries are being made on new orders, the preponderance of shipments over new business must be fairly great.

Another week has gone by with no discernible change in finished steel prices, but the absence of forward buying probably reflects buyers' expectation as to future price tendencies. Elimination of the 12-hr. day probably will add to costs, but to what extent can hardly be measured before plans for this movement have been generally formulated. Current prices generally are so well above invoice prices that buyers argue that increased costs resulting from the shorter workday need not necessarily mean higher prices than now are quoted, and they point also to the possible effect of the break in pig iron and scrap prices upon prices of finished steel products.

In spite of the very hot weather, steel works operations in this and nearby districts are holding up very well. The Carnegie Steel Co. holds about 92 per cent of ingot capacity, and the leading independent here is averaging about 85 per cent of ingot capacity. Reports in the daily press as to blast furnace suspensions have been much exaggerated. Since the first of July

nine furnaces in this and nearby districts have been blown out, and one furnace, a merchant stack, has been banked. The Carnegie Steel Co. has blown out six furnaces and will put down another one late this week. Youngstown Sheet & Tube Co., Republic Iron & Steel Co. and Jones & Laughlin Steel Corporation each have put down one furnace, and the Republic Iron & Steel Co. is getting ready to put off another stack. Most of the furnaces which have gone on the idle list are small ones with high costs, and the attendant loss of production will be small. There has been some activity in foundry iron, but so much crossing into the territories not ordinarily served by the sellers that the market on Valley iron is not very clearly defined. Still lower prices have been reached on old material, but a slightly stronger tendency is observed in coke prices, which is partly traceable to demands occasioned by the possibility that much high sulphur coke will be wanted to replace anthracite coal in case there is a strike of the hard coal miners.

Pig Iron.—The most interesting development of the week has been the sale of a substantial part of a tonnage of basic pig iron owned by a middle interest in the Youngstown district, and which constituted something of a menace to the maintenance of prices. It is

understood that 3500 tons, or about one-half of the total lot, has been disposed of recently at prices ranging from \$24 to \$24.50, Youngstown. A Sharon melter purchased 1000 or 1500 tons of this iron at these prices. Producers, both steel works and merchant, still are holding this grade at \$25, but have not succeeded in doing business at that price. It is claimed that \$25 is about cost, and there is no disposition to meet prices made on resale tonnages. Until all the resale iron is out of the way, it probably will be hard for sellers to get the higher figure. Such business as has been done in Bessemer iron has been at \$26.50 Valley furnace, although it is claimed by a local melter who has an inquiry out for 600 tons for last quarter shipment that a lower price has been quoted. Sale of foundry iron reached a relatively large total. The National Radiator Co. has closed for 1250 tons of No. 2 iron for its Newcastle, Pa., works, and for about 2500 tons for its Johnstown, Pa., works. The Johnstown iron was placed at a delivered price of about \$26.50 and the tonnage for Newcastle at around the same delivered price. None of this iron is from Valley furnaces, most of which are asking \$26 furnace. The Union Radiator Co., Johnstown, Pa., which has increased its inquiry to 750 tons, has a delivered price of \$26.34, or about 18c. a ton below the delivered price of a Johnstown producer. Eastern interests are reported to have taken a small tonnage of low phosphorus iron at \$32.50 delivered Pittsburgh, or about \$27 at furnace, a drop of \$1 from the price of a week ago on this iron. The Valley maker of this grade now is quoting \$33 furnace.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$25.00
Bessemer	26.50
Gray forge	\$24.50 to 25.50
No. 2 foundry	25.00 to 26.00
No. 3 foundry	24.50 to 25.50
Malleable	24.50 to 25.50
Low phosphorus, copper free (nominal)	33.00

Ferroalloys.—The market here is dull almost to the point of stagnation. Consumers generally are well protected by contracts, and with consumption on a somewhat lighter scale than during the first half of the year, there is no occasion for purchases beyond contract shipments. Quotations on all ferroalloys are unchanged from those of a week ago, but they are merely nominal in the absence of important sales. Some resale ferromanganese is available at \$115 at the Atlantic seaboard, but this price is no more interesting to consumers than is the quotation of domestic producers and of importers of \$117.50. The great bulk of the tonnage now moving on contracts carries a price several dollars a ton below current quotations. Prices are given on page 305.

Semi-Finished Steel.—Open market activities still are extremely limited because nonintegrated manufacturers are so well supplied by shipments on requirement contracts. The general quotation on billets, slabs and sheet bars still is \$42.50, Pittsburgh or Youngstown, and mills in those centers have not yet shaded that price, although northern and central Ohio mills are reported to have gone to \$40 mill, or even lower on slabs and sheet bars. It is quite apparent, however, that the maintenance of the quotation of \$42.50 is for the purpose of protecting contracts rather than because there is an outlet for all of current production. There is little forward buying of finished steel, and finishing mills are not specifying very far ahead on semi-finished material. The situation, also, is weakened by the fact that pig iron and scrap prices are down so much from their second quarter levels. On forging billets, makers in this territory have found sales above \$47.50 impossible. Makers of wire rods admit that there is room for considerable improvement both in specifications and orders. Outside of an inquiry from the National Tube Co. for 4500 tons of narrow skelp, the market for this product is extremely dull. Prices are given on page 305.

Wire Products.—While there is slightly more interest in the market on the part of the distributing and manufacturing trade, actual business still is of very moderate proportion, and mill bookings rapidly are dwindling with new orders much smaller than those

that are being completed. There is greater anxiety for business on the part of the mills, but the need of orders is not yet so great that there is any disposition to get them at the expense of prices. Quotations are given on page 304.

Steel Rails.—Makers of light rails rolling them from new billets or from new standard rail crops still claim sales at 2.25c. base for 25-lb. to 45-lb. rails, despite the competition from rerolled rails, which are reported to be available at \$2 to \$3 a ton less. This concession probably is partly accounted for by the fact that the base sizes of rerolled rails are from 12 lb. to 45 lb., while on new steel rails the base price applies on 25-lb. to 45-lb. sections, and there is an extra charge for rails weighing less than 25 lb. per yd. Demand is somewhat better than it has been, but there is still room for improvement.

We quote light rails rolled from new steel at 2.25c. base, (25 lb. to 45-lb.); those rolled from old rails, 2.10c. to 2.25c. base, (12 lb. to 45-lb.) f.o.b. mill; standard rails, \$43.00 per gross ton mill, for Bessemer and open-hearth sections.

Cold-Finished Steel Bars and Shafting.—Shipments against old orders still are in much greater volume than strictly new business, but prices hold firm because there is not much selling pressure, owing to the higher average price of hot-rolled bars involved in the recently adopted extras for quality, cutting, etc. The automotive industry is rather sparing in specifications, and is not yet showing much interest in requirements for the latter part of the year. Automobile manufacturers just now are engaged in perfecting plans for the 1924 series of cars, and this affects the activities of the parts makers. Demands from the machine tool industry are light, and agricultural implement manufacturers are doing very little buying. Prices are given on page 304.

Bolts, Nuts and Rivets.—Makers of rivets in this district claim to be holding to a base of \$3.25 per 100 lb. for large structural rivets, and while they are making occasional cuts of as much as \$2 a ton on attractive business, they are not meeting the prices recently reached in the Cleveland district. It is claimed that with bars at 2.40c. base, Pittsburgh, the margin of profit is small enough even at \$3.25 base for large structural rivets. Even a base of 50, 10 and 10 per cent off list for large machine bolts does not seem to be interesting to buyers, who, although specifying fairly well against old orders, are very sparing in the matter of new purchases. Prices and discounts are given on page 304.

Track Fastenings.—Recent reduction to a base of \$3.50 for 100 lb. for small railroad spikes by the American Steel & Wire Co. has not yet been followed by local independents, who continue to quote \$3.75, although sales at that price are almost impossible and the bulk of current production is being stocked. Makers here are well supplied with orders for large railroad and for boat and barge spikes, and new business is practically even with shipments on old orders. Prices are given on page 304.

Iron and Steel Bars.—As is true of most all finished steel products, inquiries for merchant bars are more numerous, but they run to small tonnages and call for prompt delivery. Recently adopted extras add considerably to costs and buyers are cautious about forward buying until satisfied that there is to be no easing in base prices. Demand for iron bars is slowing down, but makers do not yet need orders badly enough to shade prices.

We quote soft steel bars, rolled from billets, at 2.40c. base; bars for cold-finishing of screw stock analysis, \$3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more f.o.b. Pittsburgh.

Tubular Goods.—The general situation is much as it has been for several weeks past. Oil producers are buying storage tanks on account of overproduction of crude oil, and are cutting down on their pipe purchases. There is a good deal of pressure on the mills for deliveries of merchant pipe and a fair amount of new business. Discounts are given on page 304.

Sheets.—Real activity is lacking, although in common with other products the inquiry shows some im-

provement. Deliveries on old orders are providing the requirements of consumers fully, and fresh buying is entirely for small lots. Full finished sheets are rather slow because of the between season period in the automotive industry. Plain black sheets are not selling very freely, and while it is claimed here that 3.85c. base is not being shaded, the report persists that some mills are badly enough in need of orders to go to 3.75c. base to secure them. Prices are given on page 304.

Tin Plate.—While there has been a slight gain in production, the position of makers with regard to keeping their customers fully supplied is not materially better than it was a week ago. A considerable demand for food container material lately has developed from the Pacific Coast and Hawaii, where crops are exceeding early estimates. It promises to be a serious problem for manufacturers to get out all the tin plate that will be wanted for food containers as early as is required. There is no change in prices.

Hot-Rolled Flats.—New business is better than it has been, but falls far short of making good completed orders. Much of the business for the present quarter was booked at 3.30c. base Pittsburgh, but on recent bookings 3.15c. base has been the prevailing price, while on the wide sizes, where competition is greatest on account of the ability of skelp and blue annealed sheet makers to enter the market, prices as low as 3c. base have been made. Specifications on cotton ties indicate that the crop is more promising than it was earlier and that tie requirements will exceed early expectations. The August price on ties is \$1.62 per bundle of 45 lb., there being a carrying charge of 1c. per bundle per month. Prices are given on page 304.

Cold-Rolled Strips.—Although this product is not very active, there seems to be enough business to go around to sustain recent prices of from 5c. to 5.25c. base Pittsburgh.

Structural Material.—There has been no change in prices, but shipments against old orders considerably exceed new business and the mills are advancing their delivery promises. Structural lettings in this district are few and small, prospective business includes a warehouse for the Rosenbaum Co., a combination church and office building for the Smithfield Methodist Episcopal Church, a church for the German Evangelical Lutheran Church, and a four-story building for a local floral concern. It is claimed that the erected price on a viaduct for a Middle Western railroad will be somewhat above \$100 a ton instead of \$90 a ton as recently reported. Plain material prices are given on page 304.

Plates.—There continues to be a lively demand for tonnages for early delivery in connection with tank and car repair work. The Greenville Steel Car Co. is reported to be seeking 1500 tons and the Dravo Contracting Co. is low bidder on six steel scows for the U. S. Engineers, Louisville, Ky., for which about 725 tons of steel will be required. Leading companies pass by new inquiries because they cannot make the required delivery. Prices are given on page 304.

Coke and Coal.—The spot coke market still is somewhat depressed by tonnages thrown back upon it as the result of blast furnace suspensions. Sales have been made of such lots of furnace coke lately as low as \$4 per net ton at oven, but on new production \$4.25 now is minimum, and some producers are unwilling to go below \$4.50. A local steel company seeking a large tonnage for August delivery failed to uncover a lower price than \$5. There seems to be three distinct markets on furnace coke at present, that for "distress" tonnages, that for new production on weekly contracts and that for longer shipping periods. The spot market on foundry coke is still quotable from \$5.25 to \$5.75 and the contract market from \$6 to \$7, generally \$6 to \$6.50. The possibility of a strike of the anthracite miners has strengthened the market on off grade coke, but thus far does not seem to have helped the coal market, which is dull and weak. We quote spot tonnages of mine run steam coal from \$1.65 to \$2 per net ton at mines and mine run gas and coking coal at

\$2.25 to \$2.35. Slack coal commands about \$1.30 for steam and \$1.50 for gas grade.

Old Material.—The tendency of price still is downward because offerings exceed the demand. There is only one steel plant in this district that is taking scrap at present, others being closed to shipments either by suspensions or railroad embargoes. This works to the advantage of the one open spot, since dealers have much material rolling for which they are anxious to find a place. We note one good-sized sale of heavy melting steel at \$17, but as part of the contract, the seller is to be permitted to ship an equal tonnage against an older and higher-priced order. This is merely a case of "marrying" orders. It is doubtful whether a consumer who could not provide shipping instructions against an old and high-priced contract could buy this grade at less than \$17.50, and there are few dealers who will go that low, except on tonnages that can be shipped immediately. There is practically no market for the lighter sorts of old material, and prices are nominal and entirely subject to negotiation. The market is well sustained on the better grades of railroad material by fair-sized purchases by the steel foundries.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$17.00 to \$17.50
No. 1 cast, cupola size	20.00 to 20.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.50 to 19.00
Compressed sheet steel.....	15.50 to 16.00
Bundled sheet sides and ends....	14.50 to 15.00
Railroad knuckles and couplers...	20.00 to 21.00
Railroad coil and leaf springs...	20.00 to 21.00
Low phosphorus standard bloom and billet ends.....	22.00 to 23.00
Low phosphorus plates and other grades	21.00 to 22.00
Railroad malleable	18.50 to 19.00
Steel car axles	19.00 to 19.50
Cast iron wheels.....	18.50 to 19.00
Rolled steel wheels	20.00 to 20.50
Machine shop turnings	11.00 to 11.50
Heavy steel axle turnings.....	14.50 to 15.00
Short shoveling turnings.....	14.00 to 14.50
Heavy breakable cast	17.00 to 17.50
Stove plate	14.50 to 15.00
Sheet bar crop ends.....	20.00 to 21.00
No. 1 railroad wrought.....	15.00 to 15.50
Cast iron borings	14.00 to 14.50

In celebration of the thirtieth anniversary of its founding, the General Electric Co., Schenectady, N. Y., has issued to its stockholders, in behalf of the chairman and president, a "Thirty-Year Review of the General Electric Company." It is a fascinating 34-page booklet showing briefly what the company has contributed to the various fields of the science, and industry and human life in general. It opens with a short summary of the financial growth of the company since it succeeded the Edison General Electric Co. and the Thomson-Houston Electric Co. in 1892. The following titles of sections give a good idea of the contents of the booklet: "Large Scale Power Generation," "Power of the Sea," "In the Field of Transportation," "Revolutionizing Manufacture Through Electric Drive," "At the Panama Canal," "Contribution to Long Distance Wireless Communication," "Cleaner and Better Fuel," "Lightening Home Burdens," "Progress in Illumination," "One Million Volts," "How G. E. Money Is Spent" and "Opportunities for the Future." Lists of the company's manufacturing plants and sales offices and excellent photographs supplement the text.

D. G. McMillan has disposed of his interests and retired as president of the National Gauge & Equipment Co., LaCrosse, Wis., manufacturer of dash gages and metering devices for automobiles. He served as trustee of the bankrupt Hans Motor Equipment Co. in 1914 and with P. M. Gelatt organized the present company in 1915, developing it into one of the largest industries in the Northwest. Mr. Gelatt, formerly vice-president and secretary, has been elected president; J. M. LaVaquer, vice-president and treasurer; P. E. Stroup, Detroit, vice-president and sales manager; J. E. Richmond, secretary.

Chicago

Consumers Considering Future Needs—Pig Iron Still Declining

CHICAGO, July 31.—The steadiness of finished steel prices has been a source of surprise to many consumers in view of the continued lull in the market. It is becoming apparent that the backlogs of local mills are larger than was generally supposed. Railroad car builders who bought large tonnages early in the year find that there is little or no improvement in deliveries, although they are pressing the mills hard for shipments in an effort to expedite the completion of equipment urgently desired by the carriers for their fall traffic. While few observers are willing to hazard a guess as to the future course of the market, an increasing number of consumers are giving serious attention to the placing of their future supplies. Users' stocks are generally low, and the possibility that more liberal buying will develop within the next month or two is entering into the calculations of the mills. Steel warehouses have noted an improvement in demand during the past ten days, and this may be a forerunner of more general buying at the mills. It is true that industrial activity has been checked in some directions, notably in the agricultural implement field, but local mills are still pressed for deliveries against past commitments, and the specifications received by the leading producer during the past week were the heaviest in six weeks and exceeded the weekly average for the last three months.

The steel market as well as all other markets has been overcast with gloom by the sharp decline in wheat, but it is believed in some quarters that the importance of that commodity as an economic factor has been overestimated. O. P. Austin, statistician, the National City Bank, New York, is authority for the statement that the value of the wheat harvested in 1922 was only 10 per cent of the total crops of American farmers and barely 6 per cent of the total wheat produced by them in that year.

Oil storage tank awards continue to feature the steel buying. The Sinclair Crude Oil Purchasing Co. has evenly divided an order for 60 tanks requiring 18,000 tons of plates between the Chicago Bridge & Iron Works and the American Bridge Co. Other tank awards for the week account for nearly 3400 tons additional. Two car ferries placed by the Pere Marquette involve 5000 tons. Sustained activity in the building field is indicated by an inquiry by the Sanitary District, Chicago, for 6250 tons of reinforcing bars.

Local mill operations remain substantially unchanged, although another blast furnace has been put out. The Inland Steel Co. continues to operate at 70 to 80 per cent of ingot capacity, while the Illinois Steel Co. remains on a 93 per cent basis. The latter company, however, has blown out a blast furnace at South Works for relining. One of its Joliet stacks was put out for the same reason a week ago. It now has 25 out of 27 steel works stacks operating, besides one merchant furnace active at Milwaukee. Local independents have formulated no program for the introduction of the 8-hr. day, but will follow the plan which will be announced following the conclusion of the conferences between the executives and the subsidiary presidents of the United States Steel Corporation.

Pig Iron.—The market remains quiet and weak, and local iron is now quotable at from \$27 to \$27.50, base furnace. At least one Southern furnace is now quoting \$24, base Birmingham, but even at that figure cannot compete with Northern producers for business in this territory. A southern Wisconsin melter is inquiring for 1000 tons of malleable for delivery over the remainder of the year and a Michigan user is in the market for 400 tons of foundry for August and September shipment. A local purchasing office has closed for 1000 tons of basic for delivery to an Ohio plant. Orders and inquiries, however, are notably few, but sellers are of the opinion that buying cannot be postponed much longer. While there has been some decline in the melt of foundries, particularly those serving the farm im-

plement industry, iron consumption in the aggregate is holding up surprisingly well. At the same time, stocks on users' yards have reached a low point, probably averaging not more than 30 days' supply.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yard or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging	
sil. 1.50, delivered at Chicago..	\$32.04 to \$32.15
Northern coke, No. 1, sil. 2.25 to	
2.75	27.50 to 28.00
Northern coke, foundry No. 2, sil.	
1.75 to 2.25	27.00 to 27.50
Malleable, not over 2.25 sil.	27.00 to 27.50
Basic	27.00 to 27.50
High phosphorus	27.00 to 27.50
Southern No. 2	30.01 to 31.01
Low phos., sil. 1 to 2 per cent,	
copper, free	34.00 to 35.00
Silvery, sil. 8 per cent	39.29

Ferroalloys.—Demand for the ferroalloys is almost entirely absent, and prices are untested. It is intimated that foreign producers of ferromanganese might entertain offers of \$115, seaboard, for fourth quarter delivery, but no sales at that price are reported.

We quote 80 per cent ferromanganese, \$125.06 to \$125.88 for all deliveries; 50 per cent ferrosilicon, \$88 to \$90, delivered; spiegeleisen, 18 to 22 per cent, \$53.58, delivered.

Plates.—The Sinclair Crude Oil Purchasing Co. has placed 30 oil storage tanks, calling for 9000 tons, for erection near Casper, Wyo., with the Chicago Bridge & Iron Works. Considerable additional tank work is pending. The Pere Marquette has awarded two car ferries, requiring 500 tons of plates, to the Manitowoc Shipbuilding Co. The steel for both the tanks and the ferries will be rolled by the leading local mill. The Government has let two additional river barges, 300 tons, with the Dubuque Boat & Boiler Works. Orders for plates for early shipment, principally small lots, continue to go to mills east of here in view of the forward commitments of local producers. Chicago mill prices are firm and there continues to be pressure for deliveries, particularly from the car builders. Up to July 1 not even half of the cars and locomotives on order had been delivered to the railroads.

The mill quotation is 2.60c. to 2.80c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Rails and Track Supplies.—Considerable rail tonnage will be placed as soon as the mills announce their prices for 1924. At present writing it seems probable that the current price will be continued. Railroad orders for track supplies, although of a hand-to-mouth character, are fairly numerous, several lots of from 5000 to 10,000 kegs of spikes and bolts having been placed.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled steel, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.85c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base and track bolts, 4.90c. base.

Structural Material.—Fabricating awards for the week constitute an encouraging total for this season and new work continues to develop in fair volume. Action on the new Palmer House, Chicago, involving 10,000 tons, will probably be deferred until this fall, when a number of other projects now in contemplation are also expected to come up for bids. The market, though generally characterized as quiet, is steady and local prices on plain material are firm.

The mill quotation on plain material is 2.60c. to 2.70c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Bars.—In a comparatively quiet market the railroads are buying fair quantities of soft steel bars for car repair work and car specialty makers are replenishing their supplies. Agricultural implement makers, on the other hand, are taking less steel as their sales decline. The automobile industry is also slowing down, although in contrast with the farm machinery manufacturers its production is still at high rate. On the

whole, steel consumers are consistently cautious, preferring to limit themselves to deliveries against their contracts and small orders for early shipment, rather than to commit themselves ahead. Some business for early delivery is going to mills east of here because of the obligations of local producers. Demand for bar iron is light and the going price remains unchanged at 2.50c., Chicago. Rail steel bar mills have adopted new extras similar to those recently put into effect by manufacturers of soft steel bars. Current business in hard bars continues slow, but mills still have fair backlogs and look for better demand by mid-August, particularly from fence post manufacturers.

Mill prices are: Mild steel bars, 2.50c. to 2.60c., Chicago; common bar iron, 2.50c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 3c. base; hoops, 4.55c.; bands, 3.95c.

Sheets.—The situation in sheets, especially in black and galvanized, is admittedly weaker than in the other major rolled products, but new business is too light to test the market. Such small lots as are being bought generally move at the regular prices and concessions are of an isolated character.

Mill quotations are 3.85c. for No. 28 black, 3c. for No. 10 blue annealed and 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago, 4.35c. for blue annealed, 5.20c. for black and 6.35c. for galvanized.

Wire Products.—Specifications are slightly better, particularly in nails. Mill prices are unchanged. The reduction of 15c. per 100 lb. on wire nails by local steel warehouses last week brought their prices down to a parity with those of Chicago hardware jobbers. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 304.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, \$3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, \$3.80 per 100 lb.; cement coated nails, \$3.25 per keg.

Bolts and Nuts.—Third quarter specifications show no improvement and prices are weak. New orders are small and few, too few to bring out anything but sporadic concessions.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.10c.; machine bolts up to $\frac{3}{4}$ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 40 and 5 off; larger sizes, 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, \$2.50 off; blank nuts, \$2.50 off; coach or lag screws, gimlet point, square heads, 50 and 5 per cent off.

Cast-Iron Pipe.—Demand in the aggregate is smaller than in the early months of the year, but there is little change in prices. The situation is slightly easier on the larger sizes and as low as \$49, Birmingham, can be done on pipe above 12 in. in diameter. The Detroit City Gas Co. has distributed 1200 tons of 6- to 12-in. gas pipe among several makers. The American Cast Iron Pipe Co. will furnish 325 tons of 6-, 8- and 10-in. water pipe for Niles, Ill. Detroit takes bids Aug. 6 on 3264 tons of 6- and 8-in., Class B, and is considering the installation of three and one-half miles of 24-in. and 12 miles of 12-in. The Sanitary District, Chicago, has taken bids on the general contract for North Side Sewage Treatment Works, Division A, requiring 2830 tons of 6- to 60-in. Los Angeles takes bids Aug. 1 on 1500 to 1800 tons of 6-, 8- and 10-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$64.20; 6-in. to 12-in., \$60.20; above 12-in., \$57.20 to \$59.20; class A and gas pipe, \$5 extra.

Reinforcing Material.—While there is a fair demand for concrete reinforcing steel, most of the orders and inquiries are for lots under 100 tons. Prices are unchanged at 3c. to 3.25c., Chicago, but the higher price is being obtained only on extremely small lots.

Pending business includes:

Sanitary district, Chicago, North Side Sewage Treatment Works, division A, 6250 tons, bids on general concrete taken.

First National Bank, Davenport, Iowa, 250 tons, bids on general contract taken July 30.

Ford Motor Co. plant, St. Paul, Minn., reinforcing steel being purchased piecemeal, separate lots of 150 tons and 250 tons being in the market at present.

Old Material.—There has been practically no consumer buying outside of a purchase of 2000 tons of malleable by a local user. The market is listless and so lacking in transactions that prices are almost nominal. All grades of scrap are still weak and further declines have been registered, but some dealers are of the opinion that bottom has been reached. They are not yet laying in stocks, however. Large railroad offerings continue to insure an ample supply of material. The Pennsylvania, Southwestern Region, advertises 7000 tons, the Northwestern Region, 2600 tons and the Central Region 10,000 tons. The Michigan Central, the Erie and the New York Central has put out blind lists.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$22.00 to \$22.50
Cast iron car wheels	20.00 to 20.50
Relaying rails, 56 and 60 lb.	28.50 to 29.50
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	20.00 to 20.50
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	19.25 to 19.75
Heavy melting steel	16.50 to 17.00
Frogs, switches and guards cut apart	16.50 to 17.00
Shoveling steel	16.00 to 16.50
Drop forge flashings	11.00 to 11.50
Hydraulic compressed sheets	12.75 to 13.25
Axle turnings	14.00 to 14.50
Steel angle bars	17.25 to 17.75

Per Net Ton	
Iron angle and splice bars	22.00 to 22.50
Iron arch bars and transoms	22.00 to 22.50
Iron car axles	25.50 to 26.00
Steel car axles	17.50 to 18.00
No. 1 busheling	12.50 to 13.00
No. 2 busheling	9.50 to 10.00
Cut forge	14.75 to 15.25
Pipes and flues	9.50 to 10.00
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	14.75 to 15.25
Steel knuckles and couplers	18.50 to 19.00
Coil springs	19.00 to 19.50
No. 1 machinery cast	18.50 to 19.50
No. 1 railroad cast	18.00 to 18.50
No. 1 agricultural cast	17.50 to 18.00
Low phos. punchings	16.00 to 16.50
Locomotive tires, smooth	15.50 to 16.00
Machine shop turnings	8.50 to 9.00
Cast borings	12.00 to 12.50
Short shoveling turnings	12.00 to 12.50
Stove plate	14.50 to 15.00
Grate bars	12.75 to 13.00
Brake shoes	14.00 to 14.50
Railroad malleable	19.50 to 20.00
Agricultural malleable	17.00 to 17.50

The Truscon Steel Co., Youngstown, has declared a quarterly dividend of 3 per cent on common stock, payable Sept. 15 to holders of record Sept. 5, and the regular preferred payment of 1 $\frac{1}{4}$ per cent, due Sept. 1, to holders of record Aug. 21. On June 15 last the Truscon company placed its common stock on a 12 per cent annual basis, declaring a 2 per cent dividend for two months. The preferred dividend applies to \$2,274,000 of that issue and the common to 422,000 shares of \$10 par value of that issue. The company's earnings applicable to common are reported several times dividend requirements.

The Baltimore Safety Council, recently organized in Baltimore, has extended its activities to the industrial plants. It is arranging to hold classes of instruction for superintendents, foremen, master mechanics and other officials, and also is planning monthly meetings at which prominent speakers will discuss safety problems in the industrial field.

The Seattle offices of the Bethlehem Steel Corporation have been removed from the Colman Building to rooms 2019-20, L. C. Smith Building. W. C. Scott, Jr., is district representative.

New York

Pig Iron Fairly Active and Sagging of Prices Checked—Large Order for Pipe

NEW YORK, July 31.—Buying of pig iron has been fairly active during the past week and the sagging tendency of prices seems to be checked. While the buying has not been in as large volume as in the preceding week, the total tonnage represents a considerable number of melters, and the inquiry now pending is of no mean proportion. Some of this inquiry relates to tonnages concerning which no details have been made public, by special request of several companies that have come into the market. The Burnham Boiler Co., which had been inquiring for 5700 tons of No. 2X and No. 2 plain for the last half of the year, is understood to have completed its purchases. A pump company which has been inquiring for 800 tons is now in the market for from 2500 to 3000 tons, mostly for August and September delivery. A New Jersey melter is inquiring for 1500 tons for fourth quarter and a Connecticut company is in the market for 2500 tons. Hardware and electric interests are credited with buying tonnages of fair size in New England. The ruling quotation in eastern Pennsylvania and Buffalo is still \$25 for No. 2 plain, with considerable irregularity as to the higher silicon irons.

We quote delivered in the New York district as follows, having added to furnace prices \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25....	\$27.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75....	27.27
East. Pa. No. 2 fdy., sil. 1.75 to 2.25....	27.27
Buffalo, sil. 1.75 to 2.25.....	29.91
No. 2X Virginia, sil. 2.25 to 2.75.....	32.94
No. 2 Virginia, sil. 1.75 to 2.25.....	32.44

Ferroalloys.—There continue to be practically no inquiries or sales of ferromanganese and the market is featureless. The only interesting news is the fact that imports of ferromanganese in June were the largest for any month this year at 11,786 gross tons. There have been sales of a few carloads of spiegeleisen at \$47.50, furnace, but there is no inquiry before the market. Nothing is heard of transactions in manganese ore, but it is interesting to note that imports in June of 36,138 tons were not only the largest for any month this year but were only about 400 less than the total imports for the first five months of this year. The 50 per cent ferrosilicon market is unchanged and featureless and the same is true of the ferrochromium market.

Cast-Iron Pipe.—This market continues strong. While the volume of inquiry has declined somewhat, makers attribute this quietness to the realization by buyers that deliveries are so extended that it would be difficult to obtain pipe for laying before winter. Most foundries are booked well up to Nov. 1. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$62.30; 4-in. and 5-in., \$67.30; 3-in., \$77.30, with \$5 additional for Class A and gas pipe. Only a light demand is reported for soil pipe, orders being usually for small lots of a carload or two. Jobbers' stocks are, as a rule, well filled. Foundries, however, are active on old orders and particularly on pipe fittings, delivery on which has been somewhat more extended than on pipe. Effective July 27, a revision of discounts was made by Northern foundries, prices being reduced about \$1.50 per ton, in an effort to eliminate competition of Southern foundries, which was recently particularly keen. The Northern discount on 6-in. standard is now 34½ per cent, compared with 35¼ per cent, the schedule of Southern makers. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in. standard, 34½ to 35¼ per cent off list; heavy, 44½ to 45¼ per cent off list.

Finished Iron and Steel.—An expansion in the volume of specifications against contracts; some increase in the number of new orders (though many are for no more than 50 tons and few for more than 200 tons); the placing of these orders usually with the mills able to make the best deliveries (this spelling the steady passage of material into consumption), and concern expressed by buyers of the price-stiffening and

output-curtailing effect of the 8-hr. day—these factors appear to have resulted in a practical cessation of talk of lower prices. As interest on the part of buyers in fourth quarter needs is expected to become active in late August and as the producers, it is believed, will then have relatively little steel on order at prices below the current market, signs point to a testing of prices within a month. Though some mills report specifications and orders as now equalling shipments, there is a view that before another month elapses deliveries will be that much easier that only salesmanship against pressing and attractive needs of buyers will sustain prices. Today prices are firm, several instances being learned of that showed inability of inquirers to secure concessions even from mills admittedly desirous of orders, particularly in sheets. Requests are appearing for fourth quarter protection but as yet they are regarded only as feelers. Concrete bar business is active and the volume of fabricated steel work continues remarkably large. Consumption shows no cessation and suspensions are much below the normal, with no reports whatever of cancellations. One item of special interest was the placing with the Jones & Laughlin Steel Corporation of 25 miles of 6-in. pipe for the Atlantic Refining Co. for Louisiana delivery.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c.; plates and structural shapes, 2.84c.; bar iron, 2.74c.

Coke.—The coke market shows little change. Probably as low as \$4.50 could be done on standard furnace coke for prompt delivery, and from \$5.50 to \$6.50 on standard foundry coke. There is virtually no contracting. Fear of a strike in the coal fields has caused much uncertainty, especially as to contracts. By-product coke is quoted at \$11.34 to \$11.41, Newark and Jersey City.

Old Material.—No improvement is evident, prices on all grades continuing weak. What little activity there is seems to be largely confined to heavy melting steel, borings and turnings, stove plate and some specification pipe. No. 1 heavy melting steel is generally unchanged, shipments going forward to eastern Pennsylvania at \$15.50 and \$16 per ton, delivered. Borings and turnings are in fair demand for Phoenixville at \$13, Johnstown at \$13.75 and Bethlehem at \$12.50 per ton, delivered, with very small tonnages appearing because of the low prices offered. New Jersey foundries are buying some stove plate, \$16.75 per ton, delivered, being the average offering price of brokers on this grade. Stove plate is also going forward to Harrisburg and Phoenixville at lower prices as a result of the higher freight rates. Specification pipe is not quotable at better than \$9.75 to \$10.25 per ton, buying price New York, based on \$14 per ton, delivered, Lebanon, Pa.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$12.00 to \$12.50
Steel rails, short lengths, or equivalent	12.50 to 13.00
Rails for rolling.....	16.00 to 18.00
Relaying rails, nominal.....	25.00 to 26.00
Steel car axles.....	20.00 to 21.00
Iron car axles.....	25.00 to 26.00
No. 1 railroad wrought.....	15.00 to 15.50
Wrought iron track.....	14.50 to 15.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long.....	14.00 to 14.50
Cast borings (clean).....	10.50 to 11.00
Machine-shop turnings	10.00 to 10.50
Mixed borings and turnings.....	9.50 to 10.00
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.75 to 10.25
Stove plate	12.50 to 13.00
Locomotive grate bars.....	12.50 to 13.50
Malleable cast (railroad).....	18.00 to 19.00
Cast-iron car wheels.....	17.00 to 18.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$20.50 to \$21.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	19.50 to 20.00
No. 1 heavy cast, not cupola size	17.50 to 18.00
No. 2 cast (radiators, cast boilers, etc.)	16.00 to 17.00

Warehouse Business.—With most warehouses July has been about as satisfactory a month for business as June, despite the dullness experienced early in the month. While the volume of orders has been large the past month, purchases were almost invariably small. Stocks in warehouse are evidently not large, many warehouses having curtailed their purchases from mills as much as possible. Prices on most grades carried in stock continue firm, although there is some reported

shading on bars. Sheets are slightly firmer than for several weeks, but low prices are still being quoted on good tonnages. A fair estimate of the market on black sheets is still 4.65c. to 5c. per lb. base and galvanized 5.65c. to 6c. per lb. base. Warehouses handling pipe report a fair degree of activity and an improvement in receipts from the mills. The schedule of discounts from list on pipe is holding slightly firmer than formerly. We quote prices on page 324.

Cincinnati

Southern Market Declines \$1—More Inquiries Are Pending

CINCINNATI, July 31.—There are more inquiries before the trade than for some weeks and while these generally are for small tonnages, they indicate more interest on the part of the melters. Sales reported are also more numerous. A West Virginia melter bought a round tonnage of southern Ohio iron, both foundry and malleable grades, last week, at prices reported to be \$25.50, Ironton. An Indiana melter bought 1000 tons of foundry, 500 being placed at \$25.50 and 500 at \$26, Ironton. An Indianapolis melter is reported to have closed on 1000 tons of malleable on the basis of \$27.90, delivered, the order being placed with a lake furnace. A northern Ohio melter bought 1000 tons of basic at \$24, Valley furnace. A Muncie melter is reported to have placed 1000 tons with a Valley furnace at \$24.50, furnace. There are evidences of a strengthening of Northern iron prices, and it is doubtful whether less than \$26 can now be done in the southern Ohio district. Some resale material is being offered at 50c. less, but the tonnage is very small. The Southern market can hardly be quoted today at more than \$24, Birmingham, as an Alabama furnace is offering iron at this price. Tennessee furnaces are quoting \$25, but will probably meet competition. Little business is being done in Southern iron, the only sale coming to light being 300 tons to an Indiana melter at \$25, base Birmingham. Silveries are quiet, but there is some inquiry for foundry, malleable and basic grades. A Detroit melter is inquiring for a round tonnage of foundry and a central Ohio melter has asked prices on 1000 tons of foundry. A Hamilton melter wants 500 tons of foundry and a steel castings company is in the market for 500 tons of basic. Ironton iron and Belfonte furnaces are scheduled to bank this week.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base).....	\$28.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	28.55
Ohio silvery, 8 per cent.....	36.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	28.27
Basic Northern	27.27
Malleable	28.27

Finished Materials.—Buying continues at about the same rate that has been maintained for the past few weeks. Orders are not large, but are becoming more numerous, particularly for shapes and plates. Some mills are reported to be getting close to the limit of their orders, and are making a drive for business, but there is no evidence of lower prices being quoted. In fact, the market seems to have acquired some strength in the past week or two. An Indiana car manufacturer bought 1800 tons of plates last week from an independent mill in the Pittsburgh district, Chicago mills being unable to quote on the business for the delivery wanted. There is little activity in bars, carload orders predominating. A noticeable increase in the demand for sheets is reported by a number of selling agencies, and while prices of black sheets are reported to be weak, shading is confined to one or two of the smaller mills which need tonnages for rolling this month. There is little activity in wire products. Track fastenings also are quiet. Prices of bolts and nuts are being shaded, and it is reported from some quarters that lower prices have been quoted on small spikes. There is little new inquiry in the structural steel market. The Kosair Temple, Louisville, is the only new project of size, the steel tonnage being estimated at 500. Several

projects involving tonnages up to 100 tons are up. In reinforcing bars, the principal inquiries come from Nashville, where a State Deaf and Dumb Institute will require about 300 tons, and additions to Vanderbilt University, about 400 tons. Road work in Kentucky will require several hundred tons.

Warehouse Business.—Jobbers report a slackening in business, but orders are still considered fair in view of general conditions. There has been no change in prices in the Cincinnati market, although warehouses in Cleveland and Chicago are reported to have cut on some lines \$3 per ton.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold-rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5.35c.; No. 28 galvanized sheets, 6.35c.; No. 9 annealed wire, \$3.60 per 100 lb.; common wire nails, \$3.60 per keg base.

Coke.—There is little activity in coke, and prices rule about the same as last week. Sales generally run to carload lots for immediate shipment, though some contracts are being negotiated for the remainder of the year.

Old Material.—The scrap market is stagnant, little trading being done even between dealers. Borings and turnings are weaker, as the local user is preparing to shut down for repairs, and there is little demand from outside points. Pipes and flues are a drug on the market. Car wheels have been reduced \$1.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton	
Bundled sheets	\$12.50 to \$13.00
Iron rails	15.00 to 15.50
Relaying rails, 50 lb. and up.....	28.00 to 28.50
Rails for rolling.....	16.50 to 17.00
Heavy melting steel.....	15.00 to 15.50
Steel rails for melting.....	14.50 to 15.00
Car wheels	14.50 to 15.00
Per Net Ton	
No. 1 railroad wrought.....	12.50 to 13.00
Cast borings	10.00 to 10.50
Steel turnings	8.50 to 9.00
Railroad cast	16.50 to 17.00
No. 1 machinery cast.....	19.00 to 19.50
Burnt scrap	12.00 to 12.50
Iron axes	22.50 to 23.00
Locomotive tires (smooth inside)	13.50 to 14.00
Pipes and flues	9.00 to 9.50

Birmingham

Pig Iron Sales Are of Small Lots Only for Prompt Delivery

BIRMINGHAM, ALA., July 31.—While one producer holding for \$27 went through a fourth consecutive week of one car per week, two others reported decidedly more brisk inquiry toward the last of the week, lots asked for ranging from 100 to 500 tons. The uniform quotation except by one one-furnace operator was \$27. This front is maintained without apparent break by every Birmingham producer, especially the large ones. They meanwhile regard the East with interest as to decreased production, buying movement and prices. Sales have been of small lots for prompt delivery. Melters are as firm on the average in holding back. Decline in soil pipe make is the sole noticeable evidence of decrease in melt. However, hold-up orders have been more numerous and iron is being piled in considerable quantity by some of the large makers. There has been no blowing out or banking of furnaces. The car situation is all that could be desired. Resale iron at as low as \$24 is heard of from the Middle West, but quantities are small.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25.....	\$25.00
Basic	24.00
Charcoal, warm blast.....	24.00

Finishing Mills.—All finishing mills aim at capacity production, missing it by handicap of hot weather and humidity. The Tennessee company mills are on same turn as during March, when it broke many records. Kobe, Yokohama and Dairen have taken 4500 tons of steel rails and 1200 tons was shipped to Puerto Colom-

bia via Mobile. The Kilby Frog & Switch Co., maker of railroad track material, is on full turn, with orders to capacity for three to four months. Wire mills report low ebb of new business, with orders on books covering next two months and operations on full turn. Labor is much easier. Bars are 2.65c., f.o.b. Birmingham.

Cast Iron Pipe.—The American Cast Iron Pipe Co. has booked 1493 tons for Minneapolis and 188 tons for Oglesby, Ill. Volume of business is falling off on account of difficulty in securing prompt delivery and weakness of the iron market, causing buyers to hold up orders to later date. The base remains at \$49. Soil pipe has slumped at least \$10 a ton and is not higher than \$55 for standard, with as low as \$50 sometimes named. Four to five plants have closed owing to cessation of demand.

Old Material.—The scrap market is slow, like the iron market, but cast grades move fairly well at the lower schedule established two weeks ago.

We quote per gross ton f.o.b. Birmingham district yards, nominal prices, as follows:

Old steel rails.....	\$16.00 to \$18.00
No. 1 steel.....	14.00 to 16.00
No. 1 cast.....	20.00 to 21.00
Tram car wheels.....	20.00 to 21.00
Car wheels.....	19.00 to 20.00
Stove plate.....	15.00 to 16.00
Machine shop turnings.....	10.00 to 12.00
Cast iron borings.....	10.00 to 12.00

Buffalo

About 25,000 Tons of Pig Iron Sold—Strong Competition for Pennsylvania Furnaces

BUFFALO, July 31.—About 25,000 tons of various grades of foundry pig iron has been sold and the total of business includes several unusual tonnages. Competition with eastern Pennsylvania furnaces on New England business has been especially keen, and while rumors of less than \$25 for silicon 1.75 to 2.25 are current, there are no specific instances known of Buffalo iron being quoted at less. Inquiry has been better and considerable business is still pending. The General Electric Co. is inquiring for 2000 tons for delivery to Schenectady. One furnace quoting \$26 encountered general quotations of \$25 throughout the territory. Most sales are for spot shipment, but several contracts for August and September delivery have been closed. The district offices of the Bethlehem Steel Co. are not quoting on Lackawanna iron for third quarter delivery, but some sales of off grades have been made from stock piles. Furnace operation throughout the district is unchanged.

We quote f.o.b. per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$26.00
No. 2X foundry, 2.25 to 2.75 sil.....	25.50
No. 2 plain, 1.75 to 2.25 sil.....	25.00
Basic.....	26.00
Malleable.....	26.00
Lake Superior charcoal.....	32.28

Finished Iron and Steel.—Greater interest is being shown by buyers in bars, shapes and plates, and sheet activity has been livelier. The market on bars is firm at 2.40c. and a fair average of small orders is recorded each day. Shapes are firm here at 2.50c., but reports of 2.40c. by Eastern mills are current. Plates for domestic shipment are uniform at 2.50c., but on Canadian business American mills have met a price of 2.40c. The galvanized sheet market holds firm at 5c. Black sheets have been sold at 3.75c. Pressure for delivery in sheets is just as strong and mills are better able to make deliveries; most of the order books on sheets are pretty well cleaned up and 30-day delivery is the rule. Jobbers have been more active on semi-finished material, but small consumers are out of the market. Agricultural implement manufacturers have been more active in seeking prices.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

Coke.—Demand has been lively and good grades of foundry are quoted at \$5.50 for spot shipment and on remainder of year contracts the ruling price is \$6 to \$6.50. A number of contracts have been closed on this basis.

Old Material.—Two consumers are buying small tonnages of heavy melting steel, but the prices they are offering are not sufficient to interest the dealers. There is still some trading between dealers to fill old orders and from \$18 to \$19 has been paid on heavy melting steel for spot shipment to fill these contracts.

We quote f.o.b. gross ton Buffalo as follows:

Heavy melting steel.....	\$17.00 to \$18.00
Low phos., 0.04 and under.....	23.50 to 24.50
No. 1 railroad wrought.....	15.00 to 16.00
Car wheels.....	16.50 to 17.00
Machine shop turnings.....	8.50 to 9.50
Cast iron borings.....	15.00 to 16.00
No. 1 busheling.....	15.50 to 16.00
Stove plate.....	17.00 to 17.50
Grate bars.....	17.00 to 17.50
Bundled sheet stampings.....	10.00 to 11.00
No. 1 machinery cast.....	19.50 to 20.50
Hydraulic compressed.....	15.00 to 16.00
Railroad malleable.....	20.00 to 21.00

St. Louis

One Southern Furnace Quotes \$24, Birmingham—Pig Iron Very Dull

ST. LOUIS, July 31.—Purchases of pig iron in this territory continue extremely light. The last week was exceedingly quiet. Melters simply will not show any interest in the market, except for a carload here and there as it is actually needed. There is no buying for future delivery. The melt in the district has fallen off with the hot weather, the closing of stove foundries here and in Belleville, and fewer orders being received by most of the other foundries. Concerns handling railroad business are the busiest. Northern iron is quoted at \$27.50, Chicago, with the understanding that an offer of any considerable tonnage would be met with a price of \$27. One Southern furnace made a price of \$24, Birmingham, subject to the maker's confirmation, and this was regarded merely as a "feeler." The St. Louis Coke & Iron Co. is quoting \$28 to \$29, Granite City.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Birmingham (rail and water), \$5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25.....	\$29.66 to \$30.16
Northern malleable, sil. 1.75 to 2.25.....	29.66 to 30.16
Basic.....	29.66 to 30.16
Southern fdy., sil. 1.75 to 2.25.....	30.17

Finished Iron and Steel.—Mills are informing their representatives here that they are well booked up on sheet mill products, but they need business in tubes and wire products. Orders in these lines are scarce. The jobbing business is still dull. Fabricators are busy, but are generally well supplied with structural material, and are buying only to supply immediate needs. Some wheel orders were placed. St. Louis Car Co. bought 520 30½-in. wheels for a Los Angeles street car order. The axles for these cars are still unpurchased. The Missouri Pacific bought 90 36-in. passenger wheels and the Mississippi River & Bonne Terre Railway bought a carload. Foreign mills are said to have gotten the 3000 to 4000 tons of billet reinforcing bars inquired for recently by Austin Bros, Dallas, Tex., at a price of \$4, delivered. A Kansas City firm wants 100 tons of basic open hearth wire rods. A Dallas (Tex.) concern bought a carload of rivets. The Pennsylvania Lines west of Pittsburgh want 1000 boiler tubes.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.45c.; No. 28 black sheets, cold rolled, one pass, 5.20c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, 4.15c.; boiler rivets, 4.25c.; tank rivets, ⅜ in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, square or hexagon blank, \$2.50; and tapped, \$2.50 off list.

Coke.—The coke market is weak, a condition due to production increasing and demand decreasing. Large by-product producers of domestic report that dealers

are buying for early shipment, the uncertainty of the anthracite situation giving them some concern.

Old Material.—Buying of old material is still confined to dealers who absorbed all of the heavy railroad offerings of the week. Dealers are using most of this material to fill existing contracts, and some of it is being laid down in yards. Consumers are still out of the market. There is no market for iron rails, the mills having abandoned their use because of the difficulty of getting any quantity. The market is nominally \$16 to \$16.50 per gross ton.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton		
Iron rails	\$16.00 to	\$16.50
Rails for rolling	17.50 to	18.00
Steel rails less than 3 ft.	18.50 to	19.00
Relaying rails, 60 lb. and under ..	26.00 to	27.00
Relaying rails, 70 lb. and over ..	33.50 to	34.50
Cast iron car wheels	18.00 to	18.50
Heavy melting steel	16.50 to	17.00
Heavy shoveling steel	16.50 to	17.00
Frogs, switches and guards cut apart	16.50 to	17.00
Per Net Ton		
Heavy axles and tire turnings ...	12.75 to	13.25
Steel angle bars	15.25 to	15.75
Iron car axles	26.00 to	27.00
Steel car axles	20.00 to	21.00
Wrought iron bars and transoms ..	21.00 to	22.00
No. 1 railroad wrought	14.00 to	14.50
No. 2 railroad wrought	15.50 to	16.00
Railroad springs	19.00 to	19.50
Cast iron borings	12.50 to	13.00
No. 1 busheling	14.75 to	15.25
No. 1 railroad cast	17.50 to	18.00
No. 1 machinery cast	18.00 to	18.50
Railroad malleable	17.00 to	17.50
Machine shop turnings	11.50 to	12.00
Champion bundled sheets	9.00 to	9.50

San Francisco

Decreased Demand for Iron and Steel Products—Some Prices Weak

SAN FRANCISCO, July 25.—While interested parties are disinclined to admit that business is quiet in iron and steel lines, there is no disguising the fact that the bookings of new business is less voluminous than it was 90 days ago. There are no special reasons for this condition, except that it is merely a reflective influence from the Eastern markets, and as is always the case with trade movements in all commodities, the effects are not noticeable on this coast until the changes are well in progress in the Eastern business centers. There has been a gradual falling off in the demand for finished steel and iron products during the last three weeks and this has reacted on the productive end of the industry. Dealers and others interested in the activities connected with iron and steel are hopeful that the fulfillment of existing contracts will be sufficient to keep things going until the business recuperates, without an intervening period of dullness. In speaking of the situation, one prominent importer says: "We have had an active market for some time past and a brief period of reaction will be beneficial in some ways rather than harmful."

Pig Iron.—Very little business is in progress and indications point to quiet trade for some little time. The fact is that consumers are well supplied and they are out of the market. It is also noteworthy that there is almost no booking of orders for fourth quarter requirements. This is not unusual at this particular time, however, because the large orders placed early in the year to avoid anticipated higher prices have been filled during the last few months, and this arriving of tonnage has not only filled all immediate needs but permitted the accumulation of material which will be available for some time. Should there be any marked trade depression, available supplies may be sufficient with very small buying until the end of the year. While some importers quote prices as unchanged but rather easy, others say asking figures on desirable lots are a trifle higher. Sellers give out figures all the way from \$35 to \$39 per ton, but why there should be this wide range, with market conditions quiet, no one seems willing or able to explain.

Coke.—The market is inactive, in fact, so dull that no quotations are given out. Some cargoes were ordered months ago for future delivery and some of these are still to come to hand but they will have no bearing upon present market conditions. Pending inquiries have so far failed to materialize into actual orders. Supplies are very moderate and several consumers are expected to be in the market within the next few weeks.

Old Material.—There has been a perceptible falling off in business during the last two weeks and in consequence there is a weakening in prices, some say, of 50c. to \$1 per ton, while others claim to be able to buy at \$1.50 per ton less now than two weeks ago. However this may be, the quotable variation in prices is not as great as in the case of pig iron, but the trade seems to be fully awake to the fact that the immediate future is a period of uncertainty that is well worthy of careful study before making any large business commitments. Advices from Los Angeles show that prices there are from \$1 to \$1.50 per ton less than in this city, but this is not an important factor because the supply in southern California is commonly larger in proportion to the demand than it is in San Francisco and vicinity.

Finished Iron and Steel.—With a fair demand for bars, rods and plates, business is moving quietly, but there is no complaint of dullness. Orders for structural steel are of good volume and judging from the number of new bond issues authorized by both municipalities and counties in this State, for improvements which will require considerable steel tonnage, the trade movement will be satisfactory for some months to come. While prices are said to be steady, there is a marked hesitancy in giving out quotable figures. The demand for wire products continues good and the same may be said as to nails. A large eight-story warehouse to be erected in Oakland for Montgomery Ward & Co. during the latter part of this year will require a large tonnage of structural steel.

Boston

Buffalo Iron Prices Hold, but Eastern Pennsylvania and Virginia Are Easier

BOSTON, July 31.—Connecticut foundries are reported to have bought iron, notably eastern Pennsylvania, freely the past week for shipments over the remainder of 1923. Sales were made largely through New York agencies, and include 1500 tons No. 2 plain and No. 2X eastern Pennsylvania at less than \$29 and \$29.50, respectively, delivered Derby. Elsewhere in New England individual sales reported did not exceed 750 tons, ran as low as car lots, averaged perhaps 200 to 250 tons, and in the aggregate were considerably smaller than for the previous week. Eastern Pennsylvania No. 2 plain sold at \$28.65 delivered, No. 2X at \$28.65 and \$29.15, and No. 1X at \$29.15 and \$29.65. Buffalo No. 2 plain and No. 2X sold at \$29.91 and \$30.41 delivered and No. 1X at \$30.41. These prices represent a shading of \$1 to \$1.50 on Pennsylvania iron, while those in Buffalo remain practically unchanged. Virginia No. 2X sold at \$32.42, off 50c. from the previous week. Car lots of Alabama were taken for mixture purposes at \$27 furnace base. A Vermont foundry is reported to have bought northern New York No. 1X at \$28.39 delivered, which figures back to \$27 furnace. The American Hardware Corporation, New Britain, Conn., is in the market for 1000 tons No. 1X, the Blake & Knowles Pump Works, Holyoke, Mass., for 500 to 1000 tons various grades, and a Providence, R. I., foundry for 1250 tons high silicon and high manganese iron.

We quote delivered prices on the basis of the latest reported sales as follows, having added \$2.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama.

East. Penn., sil. 2.25 to 2.75	\$28.65 to	\$29.15
East. Penn., sil. 1.75 to 2.25		28.65
Buffalo, sil. 2.25 to 2.75	29.91 to	30.41
Buffalo, sil. 1.75 to 2.25	29.91 to	30.41
Virginia, sil. 2.25 to 2.75	32.42 to	33.42
Virginia, sil. 1.75 to 2.25	31.92 to	32.92
Alabama, sil. 2.25 to 2.75	35.10 to	37.10
Alabama, sil. 1.75 to 2.25	34.60 to	36.60

Warehouse Business.—The movement of iron and steel out of warehouses continues of good proportions for this time of the year. Stocks of the largest warehouses are in fairly good condition, but those of the smaller ones are broken, rounds being in urgent need. Warehouses are specifying against mill contracts freely, and in some instances are anticipating shipments. Machine bolts have been marked down 10 per cent. Malleables, on the other hand, are 1c. per lb. higher, and horseshoe nails 75c. the package.

Soft steel bars, \$3.61½ a 100 lb. base; flats, \$4.40; regular concrete bars, \$3.76½; deformed bars, stock lengths, \$3.76½ to \$3.89; structural steel, \$3.71½; tire steel, \$4.80 to \$5.15; open-hearth spring steel, \$8 to \$10; crucible spring steel, \$12; regular steel bands, \$4.80; bands over 6 in. wide, \$5.05 to \$5.30; hoop steel, \$5.80 to \$6.30; cold rolled steel, \$4.75 to \$5.25; refined iron, \$3.61½; best refined, \$4.75; Wayne iron, \$5.50; Norway iron, \$6.60 to \$7.10.

Coke.—Both the New England Coal & Coke Co. and the Providence Gas Co. are quoting by-product foundry coke for August shipment at \$13.50, delivered New England, the same as for July shipment. Both concerns are sold far ahead on domestic fuel and operating at full capacity. Specifications against foundry coke contracts are steadily increasing, but not for stocking purposes, which indicates New England foundries are well occupied. Connellsville foundry cokes are still obtainable for less money than New England product, but melters show little interest, no sales of importance being reported here the past week.

Old Material.—Scattering sales of No. 1 machinery cast to New England foundries at \$22 to \$22.75 delivered serve to keep interest in the old material market alive. Aggregate sales the past week were in the neighborhood of 1000 tons. Local brokers, within the past day or two, received inquiries from Pennsylvania mills for 100 to 200 ton lots of heavy melting steel at \$15.50 delivered, which may be forerunners of more active buying. A maker of brake shoes offers \$15.50 delivered New England for stove plate, but is securing little material. Brokers are destitute of orders for most other kinds of scrap. The market for pipe, cast iron borings and shafting appears virtually lifeless.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$22.00 to \$23.00
No. 2 machinery cast.....	20.00 to 21.00
Stove plate	15.50 to 16.50
Railroad malleable	24.00 to 24.50
Street car axles.....	21.00 to 21.50

The following prices are offered per gross ton lots f.o.b. Boston common rate shipping points:

No. 1 heavy melting steel.....	\$11.50 to \$12.00
No. 1 rail wrought.....	12.50 to 13.00
No. 1 yard wrought.....	11.50 to 12.00
Wrought pipe (1-in. in diam., over 2 ft. long).....	8.50 to 9.00
Machine shop turnings.....	9.00 to 9.50
Cast iron borings, rolling mill.....	11.00 to 11.50
Cast iron borings, chemical.....	12.00 to 12.50
Blast furnace borings and turnings	9.00 to 9.50
Forged scrap and bundled skeleton	9.00 to 9.50
Shafting	18.00 to 18.50
Street car axles.....	18.00 to 18.50
Rails for rerolling.....	13.00 to 13.50
Stove plate*	11.00 to 12.00

*For Pennsylvania shipment.

Detroit Scrap Prices Lower

DETROIT, July 31.—New low levels have been established on old material for the year. Melters are showing interest in pig iron for third quarter. Interest is being shown by dealers in the offering of 3500 tons of miscellaneous scrap by one of the largest producers for August delivery.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, automobile and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel.....	\$14.50 to \$15.00
Shoveling steel	14.50 to 16.50
No. 1 machinery cast	17.00 to 19.00
Cast borings	9.75 to 10.75
Automobile cast scrap	21.00 to 23.00
Stove plate	14.00 to 16.00
Hydraulic compressed	11.50 to 12.50
Turnings	7.25 to 8.25
Flashings	9.50 to 10.50

Philadelphia

Improvement in Pig Iron More Pronounced—Plates in Active Demand

PHILADELPHIA, July 31.—The improved tone in the general iron and steel market in the Philadelphia district has been given added strength during the past week. It is especially marked in the case of pig iron. This is due to actual increase made in the volume of inquiries and sales. In other lines the better feeling is based, partly at least, on sentimental conditions rather than any greater movement in the way of inquiries and purchases, except in the case of plates. The market for this product has been given a firmer position also because of further buying and specifications against contracts at 2.50c., base Pittsburgh. The market for sheets seems to be well founded on existing prices, blue annealed, perhaps being in the strongest position at 3c., base Pittsburgh. The other lines of rolled steel are largely marking time, but there is a more hopeful feeling that they will be stimulated by a buying movement before mills, now fairly well booked, have taken care of present tonnages.

While minimum prices of foundry grades of pig iron remain unchanged, there has been some equalizing of freight rates, which has brought down the delivered levels of the more distant furnaces. There has been another rather heavy sales movement of these grades in this district the past week, and it is estimated that 125,000 tons of foundry iron has been sold in this district during July. Sales of basic for the month have not exceeded 10,000 tons. Virginia grades are not reaching this district because of high freight rates. Malleable and gray forge are inactive, and prices, brought in line with quotations on the active grades, are nominal. Standard low phosphorus, copper-free, has shown a price recession of \$1 with a minimum of \$29, furnace, while copper-free, foreign low phosphorus is quoted at \$30, f.o.b. cars, Philadelphia, a decline of \$3 under last week. Blast furnace interests say that buyers are sounding the market with much more interest, and apparently are manifesting the belief that the bottom has been reached. Some producers now are predicting an upward price turn in the near future.

The scrap market is listless, with further declines of 50c. to \$1 a ton in some of the leading grades, and a 50c. increase in heavy breakable scrap and stove plate for steel plants, this rise being due to sales of fair-sized tonnages.

Pig Iron.—Sales of foundry iron by furnaces in this district the past week have involved good-sized tonnages. They have included the several grades. The tonnages are for delivery to this district, New York and New England, the latter taking a heavy proportion. No change has been made in the minimum price, but some of the more distant furnaces have equalized freight rates so as to attract business. There is a much more confident feeling among producers, some of whom believe that the bottom of the market has been reached and that the tendency of prices now is upward. It is evident that some buyers are showing more interest and because of the purchases made and negotiations under way, it is apparently their feeling that the trend no longer is downward, at least, though there are those who say they do not share this opinion of the market. Among sales of the different foundry grades was a fair-sized tonnage for the Burnham Boiler Corporation, for delivery to its plants at Irvington, N. Y.; Lancaster, Pa., and Elizabeth, N. J., over the remainder of the year. The market for other grades remains dull. An inquiry is out for 200 tons of copper bearing low phosphorus iron, generally quoted at \$32, furnace, though a quotation of \$33 also is being made. The price range on standard copper free low phosphorus has declined \$1 and is now quoted \$29 to \$34, furnace, while copper free foreign low phosphorus iron is down \$3 and is quoted \$30, f.o.b. cars, Philadelphia. Fear of a strike of anthracite miners has stimulated purchases for bituminous coal and furnace coke, and has had a senti-

mental effect in strengthening the pig iron market. Imports of pig iron to this district the past week amounted to only 215 tons, which came from East India.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to \$1.64 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$25.76 to \$26.34
East. Pa. No. 2X, 2.25 to 2.75 sil.	26.26 to 26.84
East. Pa. No. 1X.....	26.76 to 27.34
Virginia No. 2 plain, 1.75 to 2.25 sil.	31.17 to 31.67
Virginia No. 2X, 2.25 to 2.75 sil.	31.67 to 32.67
Basic delivered eastern Pa.....	25.50 to 26.00
Gray forge	25.50 to 26.50
Malleable	26.26 to 26.84
Standard low phos. (f.o.b. furnace)	29.00 to 30.00
Copper bearing low phos. (f.o.b. furnace)	32.00

Foreign Pig Iron

All prices f.o.b. cars Philadelphia, duty paid.	
Continental foundry, 1.80 to 2.50 sil.....	\$25.50
Continental foundry, 2.50 to 3.25 sil.....	26.50
Low phos., copper free, guar. not over 0.035 per cent phos.....	30.00
Continental, phos. 1.50; sil. 2 to 3.....	25.50

Ferroalloys.—While the market for ferroalloys remains dull, inquiries for small lots of ferromanganese and spiegeleisen have developed in this district the past week. There does not appear to be any prospect of any marked improvement in buying in the early future. Standard ferromanganese continues to be quoted at \$117.50, Atlantic seaboard, while 19 to 21 per cent spiegeleisen remains at \$44, furnace.

Semi-Finished Steel.—The market for semi-finished steel remains unchanged at \$42.50, Pittsburgh, for re-rolling billets and \$47.50 to \$50, Pittsburgh, for forging steel.

Plates.—Further improvement was reflected in the market for plates the past week. There is greater buying and also increased specifications against contracts. While neither movement represents a heavy volume, the stimulation in the case of both is well defined and comes from miscellaneous sources, but particularly from the railroads. An inquiry is out for 7000 tons of car plates. Mills are comfortably booked and the price of 2.50c., base, Pittsburgh, is more strongly established. One prominent maker in this district is making delivery in four to six weeks, on sheared plates, and two weeks on universal plates. Some other makers require longer periods.

Structural Steel.—Fair sized specifications are reported by some makers of structural material, who are giving delivery in 30 days. Inquiries are said to have fallen off slightly. An improvement in lettings on contracts to fabricators is reported with some mills. While there still persists a report that structural steel, in a limited quantity, may be obtained at 2.40c., base, Pittsburgh, it is said this is due to the necessity of maintaining rolling schedules and is not representative of the market, which continues to be quoted at 2.50c.

Warehouse Business.—Limited buying of steel out of stock is reported by warehouse interests, consumers desiring immediate delivery. Prices remain unchanged.

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finished, 1 1/4 x 1/2 in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, 1/4 in. and heavier, 3.65c.; tank steel plates, 1/2 in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, 1/4-in., 5.40c.; 1/2-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; square and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to 1/2-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Bolts, Nuts and Rivets.—Concessions of from 5 per cent to 10 per cent are reported to have been made by some producers of bolts and nuts on attractive business, but the general market quotations remain unchanged. The Pennsylvania Railroad has not as yet closed on its inquiries for 200,000 to 300,000 carbon-treated track bolts, and 200,000 to 400,000 heat-treated track bolts. The Philadelphia & Reading has released an order for about 700 kegs of heat-treated track bolts,

leaving 1300 kegs yet to be placed. This latter lot is for delivery on the Atlantic City division, and it is stated there is no hurry in closing the business.

Iron and Steel Bars.—The market for steel bars continues to be quiet, with a slight increase in specifications reported. The price remains unchanged at 2.40c., base, Pittsburgh. No change has been made in the market for bar iron, which is dull.

Ore.—Imports of iron ore to this district the past week totaled 43,978 tons, divided as follows: Algiers, 19,360 tons; Cuba, 12,400 tons; Sweden, 7418 tons; Newfoundland, 4800 tons. Imports of manganese ore amounted to 823 tons, all from East India.

Old Material.—Further declines have been made in some grades of scrap in this district, while increases have been made in heavy breakable cast and stove plate for steel plants. The advance of these latter two grades is attributed to fair-sized purchases, among them being those made by the Central Iron & Steel Co. for its plant at Harrisburg. Each grade has increased 50c., heavy breakable now being quoted at \$18.50 to \$19 and stove plate at \$17 to \$17.50. Heavy axle turnings are down \$1.50, at \$14 to \$15, and No. 1 forge fire is down \$1, at \$14 to \$14.50, while declines of 50c. have been made in bundled sheets and machine shop turnings for steel works. Imports of scrap to this district amounted to 2950 tons, all from Cuba.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$16.00 to \$17.00
Scrap rails	16.00 to 17.00
Steel rails for rolling.....	19.00 to 20.00
No. 1 low phos., heavy 0.04 and under	21.50 to 22.50
Cast iron car wheels.....	20.00 to 21.00
No. 1 railroad wrought.....	18.00 to 19.00
No. 1 yard wrought.....	17.00 to 18.00
No. 1 forge fire.....	14.00 to 14.50
Bundled sheets (for steel works)	13.50 to 14.00
No. 1 busheling.....	16.00 to 17.00
Mixed borings and turnings (for blast furnace use).....	12.50 to 13.50
Machine shop turnings (for steel works use)	13.50 to 14.00
Machine shop turnings (for rolling mill use).....	14.50 to 15.00
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mills).....	15.00 to 15.50
Cast borings (for chemical plants)	18.00 to 19.00
No. 1 cast.....	20.00 to 21.00
Heavy breakable cast (for steel plants)	18.50 to 19.00
Railroad grate bars.....	17.00 to 18.00
Stove plate (for steel plant use)	17.00 to 17.50
Railroad malleable	19.00 to 20.00
Wrought iron and soft steel pipes and tubes (new specifications)	15.00 to 15.50
Shafting	22.00 to 24.00
Steel axles	24.00 to 26.00

Cleveland

Finished Steel Market Shows Improvement—Blue Annealed Sheets Active

Pig Iron.—The demand for pig iron further increased during the week and local interests booked a fair volume of business in malleable and foundry grades, sales being larger than during any previous week of the past two or three months. Buying was largely for early requirements, but some fourth quarter contracts were placed. While some producers are holding to \$26, the bulk of the business at which the Valley can be used as a basing point is still going at around \$25. A Cleveland furnace is quoting \$25 for out-of-town shipments and \$26 at furnace for local delivery. Hence the local market is no longer quotable above the latter price, or a decline of 25c. a ton, although one Cleveland producer is still asking \$27. One lake furnace that has been holding to \$29, being well sold up for the third quarter, has reduced its price to \$27, has opened its books for the fourth quarter, and during the week sold 10,000 tons of foundry and malleable iron, including one 3000-ton of the latter grade. A Pennsylvania radiator interest has purchased 1050 tons from a Cleveland interest. A Muncie, Ind., interest

which recently inquired for 3000 tons of malleable iron has not yet placed its order.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 rate from Birmingham:

Basic, Valley furnace.....	\$25.00
Northern No. 2 fdy., sil. 1.75 to 2.25.....	26.50
Southern fdy., sil. 1.75 to 2.25.....	31.00
Malleable.....	26.50
Ohio silvery, 8 per cent.....	37.52
Standard low phos., Valley furnace.....	33.00

Sheets.—Some of the mills have booked considerable business recently in blue annealed sheets, but the demand for other grades is light. The market is firm except on black sheets, which are still being shaded \$2 to 3.75c. Mills are in need of black tonnage.

Reinforcing Bars.—New demand has improved. Price concessions of \$2 a ton are reported on soft steel reinforcing bars, but it appears that these are being made only by some of the jobbers on stocks purchased at lower than present mill prices. These price concessions are being made to meet the competition of rail steel mills that are quoting 2.30c. to 2.35c. New inquiries include the State Street Viaduct, Akron, 350 tons, and a building for the Schroth Packing Co., Cincinnati, 150 tons.

Semi-Finished Steel.—There has been no recent inquiry to test prices, but makers continue to quote sheet bars, billets and slabs at \$42.50.

Finished Iron and Steel.—The situation in the finished steel market shows some improvement. The volume of orders has increased, but buyers are as a rule placing orders for smaller lots than usual and the demand is largely for material for early shipment. Consumers are getting good shipments on old contracts, but appear to be using up material fairly promptly and consumers' stocks are reported to be generally low. While some further efforts have been made to break prices on round lot orders, buyers have not succeeded in bringing out lower than 2.40c. on steel bars and 2.50c. on plates and structural material. Plates are in fairly good demand and evidently mills are still booking orders for shipment in from ten days to three weeks at prices equivalent to 2.65c. to 2.70c., Pittsburgh. One local plate mill which has been quoting regular prices is

now asking 2.60c. for small lots for quick shipment. Hot-rolled strip steel is firmer, with quotations ranging from 3.15c. to 3.30c. The Pere Marquette Railroad has placed its two car ferries with the Manitowoc Ship Building Corporation. These will require 5200 tons of plates and structural material which has been placed with the Illinois Steel Co. Inquiry in the building field is very light.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.65c.; No. 28 galvanized sheets, 5.80c.; No. 10 blue annealed sheets, 3.75c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Bolts, Nuts and Rivets.—Bolt and nut specifications continue good, but new business is light. The regular discount is being shaded up to 5 per cent in some cases for round lots. Rivet specifications have improved, owing largely to a heavy demand from tank shops. Prices are well established at the reductions reported last week.

Old Material.—Prices have further declined on several grades and have now reached a point where many believe they will go little, if any, lower. Consequently dealers and some mills are buying material to lay down. Present prices are being cut little, but producers are having trouble in selling what is offered, as the trading level of the market has not been well established.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel, nominal.....	\$15.75 to \$16.00
Rails for rolling.....	17.75 to 18.00
Rails under 3 ft.....	17.25 to 17.50
Low phosphorus melting.....	18.50 to 19.00
Cast borings.....	11.00 to 11.50
Machine shop turnings.....	9.75 to 10.00
Mixed borings and turnings.....	9.75 to 10.00
Compressed sheet steel.....	13.00 to 13.50
Railroad wrought.....	12.25 to 12.75
Railroad malleable.....	20.50 to 21.00
Light bundle sheet stampings.....	10.00 to 10.50
Steel axle turnings.....	14.50 to 15.00
No. 1 cast.....	18.50 to 19.50
No. 1 busheling.....	9.75 to 10.00
Drop forge flashings.....	9.75 to 10.00
Railroad grate bars.....	12.00 to 12.50
Stove plate.....	12.00 to 12.50
Pipes and flues.....	9.00 to 9.50

NEW TRADE PUBLICATIONS

Air Preheater.—James Howden & Co. of America, 114 Liberty Street, New York. In a 12-page pamphlet, 8½ x 11 in., is described a patented air preheater designed to utilize some of the waste gases carried into the stack from the operation of steam boilers. This is designed particularly for marine use, being the invention of Frederick Ljungström of Stockholm, Sweden. James Howden & Co., Glasgow, Scotland, having made an arrangement with the Ljungström interests for extending and pushing the use of the device. By its use an increase in overall plant efficiency is claimed, as well as increase in boiler efficiency and capacity, a greater success in burning low grade fuel and reduction in heat losses.

Portable Sherardizing Furnaces and Equipment.—New Haven Sherardizing Co., Hartford, Conn. 24-page catalog showing sherardizing furnaces and other equipment used in plants for sherardizing materials. Prominent in the catalog is a group of instructions covering particularly the loading, operation, rotating and cooling of the drums and going into numerous problems of the sherardizing process. The tabular matter includes dimensions of United States standard bolts and screws.

Riveters.—Hanna Engineering Works, 1765 Elston Avenue, Chicago. Leaflet illustrating and describing briefly several of the more important types of Hanna riveters, which are made in about 500 styles and sizes.

Water Supply for Swimming Pools.—Graver Corporation, East Chicago, Ind. Bulletin on the design and construction of swimming pools and descriptions, photographs, charts and tables to explain the construction and operation of various filtration, heating and steriliza-

tion systems made by the corporation. The method of calculating the size of heater necessary for any given pool is explained.

Washing Metals by Machinery.—The Crescent Washing Machine Co., New Rochelle, N. Y. An 8-page folder, 8½ x 11 in., describing the process of washing metals by machinery and the Crescent machines which have been developed for this purpose. These machines are adapted for cleaning such metal pieces as axle housings, grease gun shells, connecting rods, automobile headlights, steering gear parts, brass electrodes, ball bearing parts, gears, brass and cast iron meter parts, flatware blanks, builders' hardware, screw machine products, etc. The circular gives a list of manufacturers in all of the lines using Crescent machines.

Crucibles.—The Ross-Tacony Crucible Co., Tacony, Philadelphia. A 24-page booklet, with cover, 5½ x 8 in., illustrating and describing the Ross-Tacony crucibles. The various types of crucibles manufactured by this company are shown and the booklet also contains views of the company's plant, both exterior and interior.

Furnaces and Industrial Fuel Equipment.—Beeman & Broughton Co., Detroit. Catalog No. 4. Describes carbonizing and annealing, carbon steel, high-speed steel, lead and cyanide, oil tempering, end heating and various special furnaces. Standard sizes are given and the illustrations include cross-section views as well as photographic reproductions. Oil and gas burners, gas and air mixers, gas and oil pumps, compressors, blowers and other equipment are also shown and described. The catalog is 7¾ x 11¾ and contains 31 pages.

Belt Conveying Apparatus.—Chillingworth Engineering Corporation, New York. Bulletin describing the Mellin belt conveyor idler. It also contains tables on dimensions, spacing of troughing idlers, proper width of belt for size of material and maximum speed of belts; as well as formulas for capacity of belts, belt tensions, and ply of belt.

FABRICATED STEEL BUSINESS

Private Enterprises Feature Both Lettings and Inquiries—More Oil Tanks

Private undertakings continue to feature activity in the fabricated structural steel field. The largest item of the week was the contracting for 60 oil tanks taking 18,000 tons of steel. Little railroad work appeared. Public work promises to supply quite a backlog, in no small part for public schools. Awards include the following:

Delaware River Bridge, anchorage cable bents, 1900 tons, to the American Bridge Co.

Western Electric Co., Kearny, N. J., 1900 tons, to the American Bridge Co.; award mentioned last week, but not definitely located.

Consolidated Gas & Electric Co., Baltimore, turbine supports, 300 tons, to the Chesapeake Iron Works.

Public Service Corporation, Newark, N. J., power station, 500 tons, to Levering & Garrigues Co.

Ice plant, Bronx Borough, New York, 400 tons, to the Hay Foundry & Iron Works.

Public School No. 30, New York, 200 tons, to the Hay Foundry & Iron Works.

New York Edison Co., Forty-first Street and East River, column cores, 900 tons; practically awarded at this writing to Post & McCord for erecting and American Bridge Co. for fabricating.

Sinclair Crude Oil Purchasing Co., 60 storage tanks in the Wyoming district, 18,000 tons, half to Chicago Bridge & Iron Works and half to American Bridge Co.

Gymnasium, Martinsville, Ind., 250 tons, to Central States Bridge Co.

Illinois Central, girder and I-beam spans, 176 tons, to unnamed fabricator.

Inland Steel Co., two 220-ft. trusses and one 100-ft. truss, 480 tons, to Kenwood Bridge Co.

State reformatory buildings, Pendleton, Ind., 400 tons, to Insley Mfg. Co.

Endicott-Johnson Corporation, St. Louis, mercantile building, 236 tons, to Mississippi Valley Structural Steel Co.

Minneapolis, truss reinforcing for concrete arches, Nicollet Avenue bridge, 138 tons, to Minneapolis Steel & Machinery Co.

Ozan-Graysonia Lumber Co., Prescott, Ark., deck plate girder span, 197 tons, to unnamed fabricator.

Memphis Cotton Exchange and office building, Memphis, Tenn., 734 tons, reinforced concrete construction substituted.

Gas holders, Niagara, N. Y., Merced, Cal., and Selma, Cal., 500 tons, to Stacey Mfg. Co.

Inland Steel Co., Indiana Harbor, power house extension, 350 tons, to Lakeside Bridge & Steel Co.

Ford Motor Co., Iron Mountain, Mich., transfer and shipping shed, 200 tons, to Worden-Allen Co. (Supplements 4000 tons placed with same interest in May. More supplemental orders to come.)

Shawsheen, Mass., bank building, 104 tons, to the New England Structural Co.

Tidewater Oil Co., eight 80,000-bbl. tanks for the Powell field in Texas, 2000 tons, to an unnamed fabricator.

Delmar Oil Co., three 55,000-bbl. tanks for Oklahoma, 450 tons, to Graver Corporation.

Invincible Oil Co., two 55,000-bbl. tanks and miscellaneous work for Louisiana, 900 tons, to Graver Corporation.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Baltimore & Ohio, small bridges, 350 tons.

Pier shed, North River, New York, 2800 tons, W. G. Triest, low bidder.

Girls' High School, Brooklyn, N. Y., 3000 tons.

Public School No. 99, Brooklyn, N. Y., 400 tons.

Apartment house, 760 Park Avenue, New York, 800 tons.

Apartment house, Grand Central area at Forty-seventh Street, New York, 5000 tons, award by Thompson-Starrett Co. imminent.

Office building, Grand Central area, New York, 6000 tons, Todd Robertson & Co., builders.

Department store, Newark, N. J., 500 tons.

Hotel, East Forty-fourth Street, New York, 800 tons.

Apartment house, East Eighty-ninth Street, New York, 800 tons.

Masonic Temple, South Bend, Ind., 600 tons, general contract awarded.

Wilson Foundry & Machine Co., Pontiac, Mich., addition, 400 tons.

Rock Island Lines, Eldon, Iowa, 12 deck plate girder spans, 650 tons.

Mead-Morrison Mfg. Co., 12-ton ore bridge for erection at Buffalo, 500 tons.

Chicago Sanitary District, North Side sewage treatment works, division A, 750 tons.

Elks' Club, Milwaukee, 1300 tons; bids opened July 25 on revised specifications. Worden-Allen Co., Massillon Bridge Co. and American Bridge Co. tied for low; award Aug. 1 or 2.

Kosair Temple, Louisville, Ky., 500 tons, bids close Aug. 15.

Vanderbilt University, Nashville, Tenn., 100 tons, bids being taken.

Store building, Detroit and Warren Road, Cleveland, 150 tons, general contract placed with the Munkin Conkey Construction Co.

Railroad Equipment Buying

The Chicago, Burlington & Quincy is inquiring for diaphragms and doors for gondola car repairs in its own shops, involving 1300 tons of plates, shapes and bars.

The Union Pacific has placed 100 dump cars with the Greenville Steel Car Co.

The Pan-American Petroleum Co. has ordered 10 tank cars from the American Car & Foundry Co.

The Minnesota Steel Co. has placed 20 flat cars with the Standard Steel Car Co.

The Inland Steel Co. is inquiring for five 75-ton billet cars.

The American Short Line Railroad Association, McCormick Building, Chicago, is inquiring for two second-hand 70-ft. steel underframe combination mail, baggage and passenger cars and two 8-wheel steel underframe cabooses, second-hand.

British Iron and Steel Market

Pig Iron Market Weak—Shipbuilding Lowest in Years—Only 11 Furnaces Blowing in Ruhr—Galvanized Sheets Higher

(By Cable)

LONDON, ENGLAND, July 31.

Pig iron still is weak, with demand stagnant, but no further steps have been taken yet to reduce output. No. 3 Scotch foundry iron is offering at £5 5s. (\$23.94), f.o.t. Hematite is dull, even the new low figures not attracting buyers.

Foreign ore is quiet, with the Bilbao strike holding up shipments. Rubio is quoted at 23s. (\$5.24), c.i.f. Tees. North African hematite ore is being sold at about 22s. to 22½s. (\$5.02 to \$5.13).

Steel buying continues poor, but there is some revival of inquiry for shipbuilding material for France. Germany is inquiring for large lines of structural steel. The Scotch holidays have affected sales and output.

Shipbuilding during July was five vessels, of 754 tons total gross register, the lowest in 40 years, except for April, 1922. Owing to the continuance of the boiler-makers' dispute, Craig, Taylor & Co., Ltd., have closed their shipyard at Stockton, and Richardson, Duck & Co. Ltd., Stockton, are dismissing men.

There is some revival in demand for Continental steel, mainly from India and Japan, for bars, sheets, sections and angles. China has bought wire nails on the basis of £15 to £16 (3.05 to 3.26c. per lb.) f.o.b. Semi-finished steel is scarce, wire rods being quoted at £10 15s. (\$49.02), f.o.b.

In the Ruhr only 11 furnaces are blowing now, against 74 in January. In Luxemburg 14 furnaces are blowing against 20 April 1 and 31 Jan. 1, out of 47. The Acieries Reunies de Burbach-Eich-Dudelange has 6 furnaces blowing (out of 23); Terres Rouges, 3 (out of 11); Hadir, 3; d'Ougrée Marihay, one and Athus-Grivegne, one.

Tin plate is steady, with improved business on the August-September basis, which now holds good for

(Continued on page 309)

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.50c.

Structural Material

Beams, channels, etc., base, per lb.....2.50c.
Sheet piling2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.
Soft steel bars for cold finishing.....\$3 per ton over base
Reinforcing steel bars, base.....2.40c.
Refined iron bars, base, per lb.....2.25c.
Double refined iron bars, base, per lb.....4.85c. to 5.00c.
Stay bolt iron bars, base, per lb.....8.00c. to 8.50c.

Hot-Rolled Flats

Hoops, ordinary gages and widths, base, per lb. 3.15c. to 3.30c.
Hoops, light gage, under 1 in. wide.....3.30c. to 3.50c.
Bands, base, per lb.....3.15c. to 3.30c.
Strips, base, per lb.....3.00c. to 3.30c.
Cotton ties, per bundle of 45 lb.....\$1.61

Cold-Finished Steels

Bars and shafting base, per lb.....3.25c.
Strips, base, per lb.....5.00c. to 5.25c.

Wire Products

Nails, base, per keg.....\$3.00
Galvanized nails, 1 in. and over.....\$2.25 over base
Galvanized nails, less than 1 in.....2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....2.75
Annealed fence wire, base, per 100 lb.....2.90
Spring wire, base, per 100 lb.....3.70
Galvanized wire, No. 9, base, per 100 lb.....3.35
Galvanized barbed, base, per 100 lb.....3.80
Galvanized staples, base, per keg.....3.80
Painted barbed wire, base, per 100 lb.....3.45
Polished staples, base, per keg.....3.45
Cement coated nails, base, per count keg.....2.70
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads..60 and 10 per cent off list
Machine bolts, small, cut threads..50, 10 and 10 per cent off list
Machine bolts, larger and longer..50, 10 and 10 per cent off list
Carriage bolts, ½ x 6 in.:
Smaller and shorter, rolled threads

50, 10 and 10 per cent off list
Cut threads50 and 10 per cent off list
Larger and longer50 and 10 per cent off list
Lag bolts60 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.....3.75c. off list
Other style heads20 per cent extra
Machine bolts, c.p.c. and t. nuts, ½ x 4 in.

45 and 10 per cent off list
Larger and longer sizes45 and 10 per cent off list
Hot pressed square or hex. nuts, blank.....3.75c. off list
Hot pressed nuts, tapped.....3.75c. off list
C.p.c. and t. square or hex. nuts, blank.....3.75c. off list
C.p.c. and t. square or hex. nuts, tapped.....3.75c. off list
Semi-finished hex. nuts:

½ in. and smaller, U. S. S.....80 per cent off list
¾ in. and larger, U. S. S.....75 per cent off list
Small sizes, S. A. E.....80 and 5 per cent off list
S. A. E., ½ in. and larger.....75 and 5 per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts50, 10 and 10 per cent off list
Bolt ends with hot pressed nuts..60, 10 and 10 per cent off list
Turnbuckles, with ends, ½ in. and smaller

55 and 5 to 50 per cent off list
Turnbuckles, without ends, ½ in. and smaller
70 and 10 to 65 and 5 per cent off list
Washers5c. to 5.25c. off list

Cap and Set Screws

Milled square and hex. head cap screws,
65 and 10 per cent off list
Milled set screws65 and 10 per cent off list
Upset cap screws75 per cent off list
Upset set screws75 per cent off list
Milled studs50 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb.\$3.00 to \$3.10
Large boiler rivets, base, per 100 lb.....3.10 to 3.20
Small rivets65 and 10 off list

Track Equipment

Spikes, ½ in. and larger, base, per 100 lb.....\$3.15
Spikes, ½ in., ¼ in. and ⅜ in., per 100 lb.....\$3.50 to 3.75
Spikes, ¾ in.....3.50 to 3.75
Spikes, boat and barge, base, per 100 lb.....3.50 to 3.75
Track bolts, ¾ in. and larger, base, per 100 lb..4.00 to 4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb..5.00 to 5.50
Tie plates, per 100 lb.....2.55 to 2.60
Angle bars, base, per 100 lb.....2.75

Welded Pipe

Butt Weld

Inches	Steel	Galv.	Inches	Iron	Galv.
1/8	Black	19 1/2	1/4 to 3/4	+11	+39
1/4 to 3/4	45	25 1/2	1/2	22	2
1/2	51	42 1/2	3/4	28	11
3/4	56	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

Butt Weld, extra strong, plain ends

1/8	41	24 1/2	2 to 3	61	50 1/2
1/4 to 3/4	47	30 1/2	1/2 to 3	+19	+54
1/2	53	42 1/2	1/2	21	7
3/4	58	47 1/2	3/4	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

Lap Weld, extra strong, plain ends

2	53	42 1/2	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	16
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent, on galvanized.

Boiler Tubes

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in.....27	1 1/4 in.....+18
2 1/2 to 2 3/4 in.....37	1 1/2 to 1 3/4 in.....+8
3 in.....40	2 to 2 1/4 in.....2
3 1/4 to 3 3/4 in.....42 1/2	2 1/2 to 3 in.....7
4 to 13 in.....46	3 1/4 to 4 1/2 in.....9

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn	Hot Rolled
1 in.....55	3 and 3 1/4 in.....36
1 1/4 and 1 1/2 in.....47	3 1/2 and 3 3/4 in.....37
1 3/4 in.....31	4 in.....41
2 and 2 1/4 in.....23	4 1/2 in. and 5 in.....33
2 1/2 and 2 3/4 in.....32	

3 and 3 1/4 in.....38
3 1/2 in. and 3 3/4 in.....39

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list
Carbon 0.30 to 0.40, base.....81 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

Cents per Ft.	Cents per Ft.
2-in. O.D. 12 gage....15	2 1/4-in. O.D. 10 gage...20
2-in. O.D. 11 gage....16	3-in. O.D. 7 gage....35
2-in. O.D. 10 gage....17	1 1/4-in. O.D. 9 gage...15
2 1/4-in. O.D. 12 gage...17	5 1/4-in. O.D. 9 gage...55
2 1/4-in. O.D. 11 gage...18	5 1/2-in. O.D. 9 gage...57

Tin Plate

Standard cokes, per base box.....\$5.50

Terne Plate

(Per package, 20 x 28 in.)	
8-lb. coating, 100 lb. base.....\$11.00	20-lb. coating I. C....\$14.90
8-lb. coating I. C....11.30	25-lb. coating I. C....16.20
12-lb. coating I. C....12.70	30-lb. coating I. C....17.35
15-lb. coating I. C....13.95	35-lb. coating I. C....18.35
	40-lb. coating I. C....19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....3.00c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.75c. to 3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb....5.35c.

Galvanized

No. 28 (base), per lb.....5.00c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, carload lots, per 100 lb.:

Philadelphia, domestic.....\$0.32	Buffalo .....\$0.265	St. Louis .....\$0.43	Pacific Coast .....\$1.34
Philadelphia, export...0.235	Cleveland .....0.215	Kansas City .....0.735	Pac. Coast, ship plates 1.20
Baltimore, domestic...0.31	Cleveland, Youngstown	Kansas City (pipe)...0.705	Birmingham .....0.58
Baltimore, export...0.225	Comb. ....0.19	St. Paul .....0.60	Memphis .....0.56
New York, domestic...0.34	Detroit .....0.29	Omaha .....0.735	Jacksonville, all rail..0.70
New York, export...0.255	Cincinnati .....0.29	Omaha (pipe) .....0.705	Jacksonville, rail and water.....0.415
Boston, domestic.....0.365	Indianapolis .....0.31	Denver .....1.27	New Orleans .....0.67
Boston, export...0.255	Chicago .....0.34	Denver (pipe).....1.215	

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb. while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb. and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets, No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cable and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 55 per cent iron.....	\$6.45
Old range non-Bessemer, 51½ per cent iron.....	5.70
Mesabi Bessemer, 55 per cent iron.....	6.20
Mesabi non-Bessemer, 51½ per cent iron.....	5.55
Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian....	11½c.
Iron ore, Swedish, average 66 per cent iron....	10.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal.....	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus.....	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates.....	\$8.50
Chrome ore, basic, 48 per cent Cr ₂ O ₃ , crude, per ton, c.i.f. Atlantic seaboard.....	\$18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₃ , New York.....	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$117.50
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid.....	117.50
Spiegeleisen, domestic, 19 to 21 per cent, per ton, furnace.....	\$45.00 to 47.50
Spiegeleisen, domestic, 16 to 19 per cent, furnace, per ton.....	44.00 to 46.50
Ferrosilicon, 50 per cent, delivered, per gross ton.....	82.50
Ferrosilicon, Bessemer, 10 per cent, per ton, furnace.....	43.50
Ferrosilicon, Bessemer, 11 per cent, per ton, furnace.....	46.80
Ferrosilicon, Bessemer, 12 per cent, per ton, furnace.....	50.10
Ferrosilicon, Bessemer, 13 per cent, per ton, furnace.....	54.10
Ferrosilicon, Bessemer, 14 per cent, per ton, furnace.....	59.10
Silvery iron, 6 per cent, per ton, furnace.....	32.00
Silvery iron, 7 per cent, per ton, furnace.....	33.00
Silvery iron, 8 per cent, per ton, furnace.....	34.50
Silvery iron, 9 per cent, per ton, furnace.....	36.50
Silvery iron, 10 per cent, per ton, furnace.....	38.50
Silvery iron, 11 per cent, per ton, furnace.....	41.80
Silvery iron, 12 per cent, per ton, furnace.....	45.10
Ferrotungsten, per lb. contained metal.....	88c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered.....	12c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.....	11.50c.
Ferrovandium, per lb. contained vanadium..	\$3.50 to \$4.00
Ferrocobaltititanium, 15 to 18 per cent, per net ton.....	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.....	\$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines.....	23.50
Per 1000 f.o.b. works:	
Fire Clay:	
Pennsylvania.....	High Duty \$48.00 to \$51.00 Moderate Duty \$43.00 to \$46.00
Maryland.....	50.00 to 53.00 45.00
Ohio.....	45.00 to 47.00 40.00 to 43.00
Kentucky.....	45.00 to 47.00 42.00 to 45.00
Illinois.....	48.00 to 50.00 45.00 to 47.00
Missouri.....	48.00 to 50.00 38.00 to 43.00
Ground fire clay, per net ton.....	6.50 to 9.50
Silica Brick:	
Pennsylvania.....	42.00 to 45.00
Chicago.....	52.00
Birmingham.....	48.00
Ground silica clay, per net ton.....	10.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	50.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$42.50
Rolling billets, 2-in. and under.....	42.50
Forging billets, ordinary carbons.....	47.50
Sheet bars, Bessemer.....	42.50
Sheet bars, open-hearth.....	42.50

Slabs.....	\$42.50
Wire rods, common soft, base, No. 5 to ¼-in.....	51.00
Wire rods, common soft, coarser than ¼-in....	\$2.50 over base
Wire rods, screw stock.....	\$5 per ton over base
Wire rods, carbon 0.20 to 0.40.....	\$3 per ton over base
Wire rods, carbon 0.41 to 0.55.....	\$5 per ton over base
Wire rods, carbon 0.56 to 0.75.....	\$7.50 per ton over base
Wire rods, carbon over 0.75.....	\$10 per ton over base
Wire rods, acid.....	\$15 per ton over base
Skelp, grooved, per lb.....	2.40
Skelp, sheared, per lb.....	2.40
Skelp, universal, per lb.....	2.40

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton.....	\$43.00
Rails, light, new steel, base, per lb.....	2.25c.
Rails, light, rerolled, base, per lb.....	2.10c. to 2.15c.
Spikes, ½-in. and larger, base, per 100 lb.....	\$3.15
Spikes, ½-in., ⅞-in. and 1-in., base per 100 lb.	\$3.25 to 3.75
Spikes, ⅞-in., base, per 100 lb.....	3.25 to 3.75
Spikes, boat and barge, base, per 100 lb.....	3.50 to 3.75
Track bolts, ½-in. and smaller, base, per 100 lb.	4.15 to 4.50
Track bolts, ½-in. and larger, base, per 100 lb..	4.75 to 5.50
Tie plates, per 100 lb.....	2.55 to 2.60
Angle bars, per 100 lb.....	2.75
Bars, common iron, base, per lb., Chicago mill.	2.50c.
Bars, common iron, Philadelphia mill.....	2.35c.
Bars, common iron, Pittsburgh mill.....	2.40c.
Bars, rails, steel reinforcing, base, per lb.....	2.15c. to 2.25c.
Ground shafting, base, per lb.....	3.65c.
Cut nails, base, per keg.....	\$3.25

S. A. E. Semi-finished Castellated Nuts and U. S. S. Semi-finished Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh)

	Per 1000	
	S. A. E.	U. S. S.
¼-in.....	\$4.80	\$4.80
⅜-in.....	5.50	6.00
½-in.....	6.50	7.00
⅝-in.....	9.00	9.50
¾-in.....	11.00	11.50
1-in.....	15.00	15.00
1 ¼-in.....	19.50	20.00
1 ½-in.....	28.50	28.50
1 ¾-in.....	37.00	37.50
2-in.....	58.50	60.50
2 ¼-in.....	88.00	97.00
2 ½-in.....	132.00	132.00
2 ¾-in.....	176.00	176.00
3-in.....	220.00	220.00

Larger sizes—Prices on application

Alloy Steel

S.A.E. Series Numbers	Bars 100 lb.
2100 (¼% Nickel, 10 to 20 per cent Carbon).....	\$3.50
2300 (¾% Nickel).....	5.50
2500 (5% Nickel).....	8.00
3100 (Nickel Chromium).....	4.50
3200 (Nickel Chromium).....	6.25
3300 (Nickel Chromium).....	8.25
3400 (Nickel Chromium).....	7.25
5100 (Chromium Steel).....	4.00
5200 (Chromium Steel).....	8.25
6100 (Chromium Vanadium bars).....	6.25
6100 (Chromium Vanadium spring steel).....	5.00
9250 (Silico Manganese spring steel).....	4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....	5.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum).....	4.75
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....	4.50
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....	4.50

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb. f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are \$10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of \$10 per gross ton; on billets smaller than 2½-in. sq. the net ton bar price applies.

EARNINGS INCREASE

Steel Corporation Shows Larger Surplus for Second Quarter

Chairman Gary Makes Conservative Statement as to Business Conditions—Takes Hopeful View as to President Harding's Illness

The report of the United States Steel Corporation for the second quarter of 1923 shows a surplus for the second time since the first quarter of 1921, when the surplus was \$2,816,905. The surplus for the second quarter of 1923 was \$7,205,412, as compared with \$4,859,351 for the first quarter.

The net earnings for the second quarter of 1923 were \$47,858,181, compared with \$34,780,069 for the first quarter. The usual quarterly dividends of 1½ per cent on the preferred stock and 1¼ per cent on the common stock were declared. Earnings for the first and second quarters of 1923 and the three preceding years were as follows:

Quarters	1923	1922	1921	1920
First.....	\$34,780,069	\$19,339,985	\$32,286,722	\$42,089,019
Second....	47,858,181	27,286,945	21,892,016	43,155,705
Third.....		27,468,339	18,918,058	48,051,540
Fourth....		27,552,392	19,612,033	43,877,862
Net earnings each year	\$101,647,671	\$92,708,827	\$177,174,126	

The statement of the earnings for the second quarter ending June 30 shows that May was the best month of the three, but June was somewhat better than April. The statement is as follows:

Earnings			
Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding		Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
April, 1923....	\$15,097,037	\$697,049	\$14,399,988
May, 1923....	18,392,070	693,395	17,698,675
June, 1923....	16,450,923	691,405	15,759,518
	\$49,940,030	\$2,081,849	
Net earnings.....			\$47,858,181
Less charges and allowances for depreciation and sinking funds on bonds.....			13,029,797
Net income.....			\$34,828,384
Deduct: Interest for the quarter on U. S. Steel Corporation bonds outstanding		\$4,706,772	
Premium on bonds redeemed.....	257,500		
			4,964,272
Balance			\$29,864,112
Dividends on stocks of the United States Steel Corporation, viz.:			
Preferred, 1½ per cent.....	\$6,304,919		
Common, 1¼ per cent.....	6,353,781		
			12,658,700
			\$17,205,412
Less sums appropriated and expended, account of additions, improvements or betterments to plants and properties.....			10,000,000
Surplus for the quarter.....			\$7,205,412

Judge Gary's Statement

Judge Gary was asked whether he would care to explain the item of \$10,000,000 shown in the quarterly report as indicating sums appropriated and expended or to be expended on account of additions, improvements or betterments to plants and properties. In reply he said:

"That is for the purpose of accurately informing the public of the fact that our surplus does not necessarily mean that we have an amount in cash equal to that. We are expending regularly about \$5,000,000 monthly for account of new properties, extensions to our plants, improvements of our own, and while a large portion of that is always properly credited to capital, yet as it has been expended it is not capital or surplus which is available for the payment of dividends. We are proposing to get our accounts into such shape that on their face they will explain this to the stockholders,

so that it will not be necessary to inquire at stockholders' meetings if our properly shown surplus is available for dividends and why it is that we do not increase our dividends."

Business Conditions

On being asked as to the steel business, especially as to prospects for the immediate future, Judge Gary said:

"No one can prognosticate definitely and with certainty what the progress of business will be, even for the next few months. If one makes a prediction which subsequent events prove was not justified there is apt to be adverse criticism. Consequently, as some of you at least know, we always try to be very careful with regard to what we say of the future.

"There has been some diminution in new business during the last thirty or forty days. That is seasonable—natural for the summer months, and therefore not at all surprising. At the present time our new orders are not quite as large as our shipments, and, of course, if that should continue for a long period our shipments would necessarily decrease, but if our orders continue to be as large as they are now, with the large tonnages on the books unfilled and unshipped, there should be enough business to keep us going practically full for a long period.

"Of course, I would not make any statement that would have a tendency to hurt business of any kind, and I would not intentionally say anything that would make anyone more hopeful of the future than the facts justify. I think I am justified in saying, however, that from the standpoint of the manufacturer we should feel very well satisfied with the present situation. Now, as always, things may happen to cause a relaxation of business, because capital is timid. People hesitate to act; they postpone purchases until they can see a little more clearly in the future. No man can say certainly that he knows there may not be interruptions to our present progress and prosperity. On the other hand, as I see it, no one is justified in saying that such will occur in the immediate future."

President Harding's Illness

The sickness of the President was mentioned, and Judge Gary said:

"I understand from the latest bulletin that President Harding is much improved, and I do not believe his illness will be prolonged. I hear that all the people in Washington and nearly everyone away from there are praying for his recovery. That means more to the President than hundreds of doctors. Mrs. Harding, brave, wise, patient, is of immense benefit to her husband just at this time. She is a very high type. I expect to see Mr. Harding on the way to recovery in the near future. He has a very good Cabinet, a very able vice-president—one of the ablest we have ever had—and even if Mr. Harding should not be able to do much, if any, work for the next three months, which I think is not possible, the affairs of this country would go on just the same."

A reorganization committee of stockholders of the Winther Motors, Inc., Kenosha, Wis., reports that it has been guaranteed sufficient support to enable it to make an acceptable bid for the entire property intact, with adequate surplus for working capital to resume the operation immediately upon transfer. A new corporation with \$500,000 capital stock will be formed. The Winther company, capitalized at \$4,200,000, was declared bankrupt Feb. 10 and scheduled liabilities at \$655,034 and assets at \$1,038,722. Edward C. Kraemer, 1204 Twenty-eighth Street, Milwaukee, is secretary of the reorganization committee.

Creditors of the Mitchell Motors Co., Inc., Racine, Wis., bankrupt, at a meeting held July 23 to receive the report of the appraisers, authorized the trustee, Herbert F. Johnson, to receive private bids for 30 days, and if no satisfactory bid is received then to offer the property at public auction. The appraisal shows a going value of \$1,819,851.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery							
	Copper, New York		Straits Tin	Lead		Zinc	
July	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis
25.....	14.87½	14.50	39.25	6.40	6.20	6.45	6.10
26.....	14.87½	14.50	38.62½	6.50	6.35	6.55	6.20
27.....	14.87½	14.50	38.87½	6.50	6.35	6.60	6.25
28.....	14.87½	14.37½	.....	6.60	6.50	6.60	6.25
30.....	14.87½	14.37½	38.87½	6.75	6.65	6.65	6.30
31.....	14.87½	14.37½	38.75	6.75	6.65	6.65	6.30

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, July 31.

The markets continue quiet and generally uninteresting. Buying of copper is light and prices are easier. The tin market is dull and quotations are lower. Speculative buying in lead has advanced prices. Prices for zinc are higher, due to unusual conditions.

Copper.—The electrolytic copper market has been exceedingly quiet. The chief buying has been for export, but this has not been large. Domestic orders have been few and as a result there have been some concessions in quotations. Electrolytic copper for delivery the rest of this year is quoted at 14.62½c., delivered, or 14.37½c., refinery, with the possibility that on desirable business these levels could be shaded slightly. One seller reports inquiries for about 2000 tons, only a small portion of which has resulted in orders. Lake copper is quoted at 14.87½c., delivered.

Copper Averages.—The average price of Lake copper for the month of July, based on daily quotations in THE IRON AGE, was 14.94c. The average price of electrolytic copper was 14.39c., refinery, or 14.64c., delivered.

Tin.—The market has been exceedingly dull and the better tone, which was manifested a week ago, has given way to very little interest, particularly by consumers. Not more than 300 to 400 tons of Straits tin was sold during the week, according to reliable estimates. Even dealers have shown very little activity. On the New York Metal Exchange a little business was done, possibly 100 tons, mostly futures. The market is devoid of interesting features, the chief interest centering in statistics for July, available tomorrow. Spot Straits tin was quoted today in a very quiet market at 38.75c., New York. The London market yesterday was about £3 lower than on July 24, with spot standard quoted at £184, 17s. 6d., future standard at £185 17s. 6d. and spot Straits at £188 7s. 6d. Arrivals this far this month have been 5205 tons, with 4547 tons reported afloat.

Lead.—The market has developed decided strength, which is attributed to demand from dealers and operators who have been bidding the market up. By some sellers consumers are reported as quite inactive and by others as buying considerably. On Thursday, July 26, the leading interest again advanced its price 25 points, to 6.50c., New York, the outside market having already exceeded this figure. Quotations today in the outside market are 6.75c., New York, and 6.65c., St. Louis. Lead in carload lots for shipment from St. Louis has sold here as high as 6.90c.

Zinc.—Within the week the price of prime Western has advanced about 20 points to 6.30c., St. Louis, or 6.65c., New York, for August shipment. The premium for September and October is about five points each month over the August price. Domestic demand is exceedingly light and consumers are buying only what they need, which is not much. The strength of the market therefore is attributed to an advance in London prices and to the firmness of ore prices here. There is even some prospect of export to England.

Nickel.—Quotations for shot and ingot nickel are unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers. In the outside

spot market quotations for shot and ingot nickel are 29c. to 32c. per lb.

Antimony.—The market for Chinese antimony continues to gather strength at 7.70c. to 7.80c., New York, duty paid, for wholesale lots for prompt and early delivery.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers in wholesale lots at 26.50c. to 27c. per lb., New York, duty paid, in such cases where they can obtain it from their principals. No quotations are made public by the leading domestic producer.

Old Metals.—Business continues quiet with a sluggish market. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	14.25
Copper, heavy and wire.....	13.25
Copper, light and bottoms.....	11.25
Heavy machine composition.....	11.00
Brass, heavy.....	8.25
Brass, light.....	7.00
No. 1 red brass or composition turnings.....	9.00
No. 1 yellow rod brass turnings.....	7.50
Lead, heavy.....	5.50
Lead, tea.....	4.50
Zinc.....	4.50

Chicago

CHICAGO, July 31.—Tendencies in the metals are uneven, tin having declined, while lead and spelter have advanced. The advance in lead does not appear to have much foundation in sales, but there has been a fair amount of buying on the rise in zinc and many consumers are of the belief that this commodity has been too low. Among the old metals lead pipe and zinc have gone up in sympathy with the virgin materials. We quote in carload lots, Lake copper, 15.25c.; tin, 40.50c.; lead, 6.75c.; spelter, 6.30c.; antimony, 8.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 8.50c.; yellow brass, 6c.; lead pipe, 5c.; zinc, 4c.; pewter, No. 1, 20c.; tin foil, 22.50c.; block tin, 27.50c.; all buying prices for less than carload lots.

GERMAN IRON AND STEEL UP

Falling Mark Exchange and Boosting of Prices Running a Lively Race

(By Radiogram)

BERLIN, GERMANY, July 30.—Hematite iron is now quoted at 14,213,000 m. per metric ton (\$13.72 per gross ton, at 95c. per 1,000,000 m.) Foundry iron No. 1 has been advanced by the Pig Iron Association to 12,960,000 m. (\$12.51), from the 4,787,000 m. prevailing during the two previous weeks (\$10.21 on July 23 and \$20 on July 16).

Steel ingots have been pegged by the Stahlbund at 18,750,000 m. (\$18.10), compared with 7,630,000 m. (\$16.28 at 21c. exchange) last week.

Steel bars are now at the ingot price of 18,750,000 m. (0.81c. per lb.), compared with 10,995,000 m. (1.05c. per lb.) last week.

Thin steel sheets have been advanced to 31,257,000 m. (1.35c. per lb.), compared with 18,149,000 m. (1.73c. per lb.) last week.

The Allis-Chalmers Mfg. Co. reports sales of \$6,082,079 in the quarter ended June 30, against \$4,778,863 billed in the same period last year. Net profits, after taxes and expenses, were \$628,418, equal to \$1.30 per share on common stock, against \$799,796 in that period of 1922. Net profits in the first half year of 1923 were \$1,097,108, against \$578,529 in that period of 1922.

W. H. Barr, president of the National Founders' Association and president of the Lumen Bearing Co., Buffalo, addressed a party of Youngstown business men last week. Invitations for the meeting were sent out by President James A. Campbell of the Youngstown Sheet & Tube Co. Mr. Barr regards the business outlook as favorable.

Youngstown Steel and Tube Change in Personnel

YOUNGSTOWN, July 31.—William C. Reilly and Frank Purnell were named vice-presidents and Walter E. Watson, general manager of sales, of the Youngstown Sheet & Tube Co., Tuesday, at a meeting of directors. Elmer T. McCleary was appointed manager of the new and enlarged Youngstown district of the company; C. M. Lingle, manager of the company's coal properties, and F. H. Gordon, general superintendent of the property at Zanesville, Ohio, acquired by the purchase of the Steel & Tube Co., Chicago. The directors elected F. R. Wahl, Chicago, assistant secretary. Mr. Wahl, who is familiar with Illinois laws, will be in charge of the company's corporate offices in Chicago, established when it took out an Illinois charter. J. C.



FRANK PURNELL

Argetsinger, a corporation lawyer of Youngstown, becomes assistant to Leroy Manchester, general counsel. The action of the board becomes effective Aug. 1. Other promotions are yet to be made in the operating department.

Mr. Purnell comes to the Sheet & Tube Company from the Bethlehem Steel Export Corporation, of which he was vice-president. He was previously in the sales organization of the Youngstown Sheet & Tube Co. President Campbell states that Mr. Purnell will practically be his assistant.

Vice-President Charles Snelling Robinson will be in charge of all operations, including ore, coal and limestone properties. Mr. Reilly will continue as assistant to Mr. Robinson. He has been with the company since 1900.

Mr. Purnell, the new executive vice-president, grew up with the Sheet & Tube Company. During the war he went to Washington as assistant to J. Leonard Replogle, in charge of the steel section of the War Industries Board. Upon conclusion of that service, he went to New York, Jan. 1, 1919, to be a vice-president of the Consolidated Steel Corporation, the export agency for a group of independent steel companies. On the dissolution of that company he assumed the management of the export subsidiary of the Bethlehem Steel Corporation. He returns to the Sheet & Tube organization at the express request of President Campbell.

For operating purposes the Sheet & Tube properties have been divided into two districts known as the Youngstown and Chicago districts. The Youngstown district will embrace the properties at Youngstown, East Youngstown, Struthers, Hubbard and Zanesville. The Chicago district will embrace the Mark and Iroquois works at Chicago, and the properties at Evanston, Ill., and Kalamazoo, Mich. The manager of the Chicago district has not yet been named.

Mr. McCleary, manager of the Youngstown district, has been since 1912 assistant general superintendent of the Sheet & Tube Company, with which he has been connected since 1906. He started with the company as a chemist, having previously served the Carnegie Steel Co. in a similar capacity in the blast furnace depart-

ment. In 1909 he was made assistant superintendent of blast furnaces and the steel department of the Sheet & Tube company.

Mr. Watson, the general sales manager and formerly assistant general sales manager, has been with the company 10 years. He came to the Sheet & Tube company from Labelle Iron Works Co., which he served as assistant manager of sales. He had previously been in the sales department of the National Tube Co. He is an official in several subsidiary companies of the Sheet & Tube company.

F. W. Gordon, made general superintendent of the Zanesville plant, was previously superintendent of this property.

The property at Mayville, Wis., including two blast furnaces, ore mines and a farm, will be operated independently, and a manager is yet to be named for these holdings.

James A. Campbell has been president of the company for 19 of the 23 years of its existence. During that period it has expanded from humble beginning to a corporation employing 25,000 men, with property and interests throughout the country and in foreign lands. Its various holdings are conservatively valued at \$250,000,000. It can produce over 3,000,000 tons of materials annually, 6 per cent of the aggregate capacity of the country.

PERSONAL

W. H. Stewart, who has been sales agent at Montreal, Canada, for Bethlehem products, has been named to succeed Frank Purnell in position and duties as vice-president of the Bethlehem Steel Export Corporation. Mr. Stewart took up his new work in New York on Aug. 1.

Alexander D. Darragh, formerly manager of the plate, shape and bar division of the Consolidated Steel Corporation, New York, sailed last week for Mexico City, where he will undertake certain special duties with the Consolidated Rolling Mills & Foundries Co., which has a steel plant and foundry at Mexico City. He will remain in Mexico at least six months.

Frank B. Zeller, for 15 years connected with the New York Air Brake Co., New York, has resigned as purchasing agent, effective Aug. 15.

Armand Alexandre has resigned as vice-president of the Harry Benjamin Equipment Co., St. Louis, and has returned to his birthplace, Paris, France, to make his future home with his aged parents. Mr. Alexandre came to America 20 years ago. He was with the Ohio Iron & Metal Co., Chicago, 10 years, and with the Benjamin company 10 years. He became an American citizen five years ago.

A. H. Vollmer, who has been resident manager at Cleveland for the Domhoff & Joyce Co., pig iron and coke, has been transferred to Chicago, where he will be resident manager after Aug. 1. He will be succeeded at Cleveland by G. K. Connelly, formerly of the St. Louis office.

H. B. Kraut, who has been export sales manager in the machine tool division of Jos. T. Ryerson & Son, Inc., has resigned his position.

Charles Williams, formerly superintendent of the Baldt Works, Penn Seaboard Steel Corporation, Philadelphia, has been appointed steel works manager for Henry Disston & Sons, Inc., Tacony, Philadelphia. Formerly he was identified with the American Steel & Wire Co. in the Pittsburgh district.

William E. Bradford, inventor of the Bradford ingot mold, has been made superintendent of open hearth department, Baldt Works, New Castle, Del., of the Penn Seaboard Steel Corporation.

Ralph W. McPhee, who resigned a few weeks ago from Henry Pels & Co., New York, to join the Black-



WALTER E. WATSON

man-Hill-McKee Machinery Co., St. Louis, has been made vice-president of that company.

Richard W. Alexander has resigned as vice-president of the Equitable Trust Co., Baltimore, to become vice-president and treasurer of the Poole Engineering & Machine Co., also of Baltimore, of which he has been a director for some time. He will remain as a director of the trust company.

James T. Wilson, vice-president and assistant general manager Nash Motors Co., Kenosha, Wis., has been appointed general manager of the Nash four-cylinder car division, Milwaukee, but will continue to direct production of the main works in Kenosha, where six-cylinder passenger cars and Nash motor trucks are built. James E. Auten, purchasing agent LaFayette Motors Corporation, Milwaukee, a Nash interest, has been installed as works manager of the four-cylinder car plant.

Guy Bayley of Sanderson & Porter, consulting engineers, New York, is now in Cleveland at the plant of the Anderson Rolled Gear Co., making an investigation for Sanderson & Porter with regard to arranging for an expansion of the manufacture of rolled gears.

OBITUARY

SIR JOHN STRATHEARN HENDRIE, president Hamilton Bridge Works Co., Hamilton, Ont., died at Johns Hopkins Hospital, Baltimore, following an operation on July 17, aged 65 years. Sir John was connected with numerous manufacturing and financial organizations, was formerly lieutenant governor of Ontario and served in the Ontario legislature.

CHARLES S. HUBBARD, at one time secretary of the H. M. Myers Co., shovel manufacturer, Beaver Falls, Pa., and later resident manager of that plant, when it was absorbed by the Ames Shovel & Tool Co., Boston, was found dead in a room in the Duquesne Club, Pittsburgh, on the evening of July 27. Death was attributed to heart disease. He was born in Minneapolis 67 years ago, but when very young went to Pittsburgh with his parents. He was educated in the public schools of that city and at the Western University of Pennsylvania, now the University of Pittsburgh, from which he was graduated with the class of 1880. He served as director of the Pittsburgh Department of Public Safety for four years, beginning in 1914, and as city treasurer for a like term, beginning in 1918. He served from 1915 to 1919 as president of the Duquesne Club.

CLAUDE R. WILSON, president International Fuel & Iron Corporation, Pittsburgh, and an active figure in the distribution of coal, coke, iron and steel, died in Chicago, July 28. He was born in Huntington, Ind., 40 years ago and came to Pittsburgh in about 1903. He was a member of the New York Club, New York, the Manufacturers Club, Philadelphia, and the Pittsburgh Athletic Association. Mrs. Wilson and a son, Raymond S. Wilson, survive.

JOHN WILLIAM PETERSON, president-treasurer, Richardson-Phenix Co., Milwaukee, division of S. F. Bowser & Co., Fort Wayne, Ind., died July 24 following an operation. He was 47 years of age and prominent as an engineer and production executive in the field of automatic lubricating devices.

WILLIAM VELTE, inventor of the Velte gas reversing valve for open-hearth furnaces, died at his home near Mars, Pa., July 17. He was born in Germany 74 years ago and was actively engaged in the foundry and machine business in the Pittsburgh district since 1872. At the time of his death he was the active head of the Velte Foundry & Machine Co., Mars. Mr. Velte is survived by his widow, two sons and six daughters. One son, Ralph C. Velte, is general sales manager of the Valley Mould & Iron Corporation, Sharpsville, Pa.,

while the other, Lawrence H. Velte, is associated with the Velte company.

DAVID N. BARKER, who for 41 years was connected with the Jones & Laughlin Steel Corporation, 22 years as manager of the Chicago office and warehouse, died on July 21 at his home at Evanston, Ill., aged 79 years. Mr. Barker retired from active work in 1916. He was born at Homer, N. Y., in 1844 and spent his early life on a farm. He went into business at Waukegan, Ill., later entering the Chicago office of the Jones & Laughlin company, of which he became manager in 1894, retaining that position up to the time of his retirement seven years ago. He was a director of the State Bank of Chicago and a stockholder in the Jones & Laughlin Steel Corporation.

THOMAS B. CONROY, president Conroy Boiler & Tank Works, Chicago, died at his home in Chicago, July 29, at the age of 62.

British Iron and Steel Market

(Continued from page 303)

shipments up to and after the end of September. There is a fair export inquiry, including Japan, Scandinavia and the Continent.

Galvanized sheets are strong, with an upward tendency. There have been large sales to India and other markets. The works now are fully sold to the end of September. India is inquiring for October to December shipment and fully 20,000 tons already have been sold.

Black sheets are firmer on the Far Eastern demand, 24 gage being sold at £13 10s. (2.75c. per lb.).

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.56 per £1, as follows:

Durham coke, delivered	£2 1½s.		\$9.46
Bilbao Rubio ore	1 4		5.47
Cleveland No. 1 foundry	5 15		26.22
Cleveland No. 3 foundry	5 4		23.72
Cleveland No. 4 foundry	5 0		22.80
Cleveland No. 4 forge	4 17½		22.23
Cleveland basic	5 5		23.94
East Coast mixed	5 0		22.80
Ferromanganese	18 0		82.08
Ferromanganese*	20 0		91.20
Rails, 60 lb. and up	9 0	to £9 10s.	41.04 to \$43.32
Billets	7 5	to 8 0	33.06 to 36.48
Sheet and tin plate bars,			
Welsh	9 2½		41.61
Tin plates, base box	1 3	to 1 3½	5.14 to 5.17
			C. per Lb.
Ship plates	9 10	to 10 0	1.93 to 2.04
Boiler plates	12 10	to 13 0	2.54 to 2.65
Tees	10 0	to 10 10	2.04 to 2.14
Channels	9 5	to 9 15	1.83 to 1.98
Beams	9 0	to 9 10	1.83 to 1.93
Round bars, ¾ to 3 in.	10 15	to 11 5	2.19 to 2.29
Galvanized sheets, 24 g.	18 10	to 19 0	3.77 to 3.87
Black sheets, 24 gage	13 10		2.75
Black sheets, Japanese			
specifications	15 5		3.11
Steel hoops	12 0	& 12 10*	2.44 & 2.54*
Cold rolled steel strip,			
20 g.	17 5		3.51
Cotton ties, Indian spec-			
fications	15 0		3.05

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports, Delivery as Specified

Foundry pig iron:			
Belgium	£5 5s.	to £5 7½s.	\$23.94 to \$24.51
France	5 5	to 5 7½	23.94 to 24.51
Luxemburg	5 5	to 5 7½	23.94 to 24.51
Billets:			
Belgium	7 5		33.06
France	7 5		33.06
Merchant bars:			C. per Lb.
Belgium	7 17½	to 8 0	1.60 to 1.63
Luxemburg	8 0	to 8 5	1.63 to 1.68
France	7 10		1.53
Joists (beams):			
Belgium	7 7½	to 7 10	1.50 to 1.53
Luxemburg	7 15		1.58
France	7 10	to 7 12½	1.53 to 1.55
¼-in. plates:			
Belgium	8 5	to 8 10	1.68 to 1.73
½-in. plates:			
Luxemburg	7 15		1.58
Belgium	7 10		1.53

MARKED IMPROVEMENT

More Active Inquiry and Buying Reported in the Youngstown District

YOUNGSTOWN, July 31.—Valley independents report substantial improvement in inquiry and in buying the past ten days, with prospects of still further betterment. Sales executives state that the aggregate of small orders received since the middle of July is helping to stabilize operating schedules. There has been no unusual demand, but a marked change as compared with buying conditions extending over the previous 30 or 45-day period.

"The past week has been better than other weeks in July," states an executive of the Youngstown Sheet & Tube Co. "Inquiries were more numerous and sales show increases. The general feeling in the industry is that buying will shortly be resumed for the usual run of fall business. Conditions look somewhat brighter than they did earlier in the month."

Buying of sheets and the larger sizes of pipe is slow, but the demand for wire products, the smaller sizes of pipe, plates and bars continues favorable. As a whole, steel makers see little cause for complaint, pointing out that there is usually a recession during the summer months, as compared with the spring and fall.

The Sheet & Tube company is now making shipments of pipe from its Western properties, purchased from the Steel & Tube Co., to the western and southwestern oil fields. The California oil developments have created a substantial demand this year for tubes, especially the larger sizes. The California field requires deep-well drilling in many cases.

Uncertainty as to Sheet Prices

There appears to be much uncertainty with respect to the actual prices applying on black sheet tonnage. Whereas some of the leading independent sheet makers in this territory aver they are adhering to the official 3.85c. quotation on the base gage, it is certain that the smaller makers are cutting below this figure in order to balance their order books. Buyers insist they are obtaining supplies below the market quotations.

The Trumbull Steel Co. has installed equipment for

the production of highly finished sheets, used extensively by the automobile industry, and is devoting a portion of its capacity to manufacture of this grade of sheets. This is helping to take up the slack.

Price Trend Downward

It is the general anticipation that steel prices are headed toward lower levels. Pig iron and scrap have already made sizable declines, though steel makers contend that scrap was unduly high. Decline in scrap prices has caused a revival in demand from melters who turned to iron supply when heavy melting advanced to \$26 and \$27 per ton.

Due to the competition from certain grades of skelp, makers of hot-rolled strip have been obliged to make sharp cuts in quotations to secure business. Reductions as much as \$6 per ton on the ordinary gages are mentioned in this connection.

Consumers in general have been cutting their stocks and buying on a hand-to-mouth basis, largely to meet current requirements. It is the belief of some sales executives that demand will continue for some time to be dominated by such needs.

The leading independent tin plate interest in this territory is booked for the quarter on tin plate, and consumers are already beginning to inquire about fourth quarter prices. As yet these have not been named. Indications are that the company will end the quarter with considerable unfilled tonnage, which will lap over into the fourth quarter. As is usually the case in the tin plate market, large consumers are being given preferential treatment, and a price of \$5.25 to such interests, in comparison with the nominal \$5.50 quotation, is mentioned.

Cold-rolled strip is still in firm demand, and hot strip deliveries are possible in three to four weeks.

Sheet bars have recently sold in this territory at \$40 per ton, while at least two interests have sold round lots of standard basic pig iron at \$25.

Merchant bars appear to be holding at 2.40c., though reports of concessions are appearing with much more frequency and persistency.

In many respects, the market exhibits unmistakable downward tendencies, with indications that "official quotations" are due for early revision to comply with actual going prices.

BELGIAN MARKET STRONGER

Prices Generally Firm, with Slight Scarcity Developing—Anxiety Over Exchange Decline

BRUSSELS, BELGIUM, July 18.—The market is prosperous and firm, with prices generally on the same level, except in a few instances where slight increases are reported. There are a favorable number of orders for bars, works which have booked ahead for three or four months generally refusing to quote. It is hoped that the future rise of the market will only be to conform to the pressure of exchange depreciation. Until now, quotations have not followed the depreciation of currency, and the exchange decline is expected to become greater unless the international situation is cleared up, and the present unfavorable commercial balance is eliminated.

Coke.—The prices for blast-furnace coke delivered in June was 10 fr. per metric ton higher than in May. Half-washed coke is quoted at 211.85 fr. per ton; washed coke 231.85 fr., and ordinary coke at 190.70 fr. (Belgian currency).

Pig Iron.—The situation is very firm with no change reported in prices. Chill cast foundry pig iron No. 3 is quoted at 465 to 480 fr. per metric ton and ordinary basic pig iron No. 3 is quoted at 420 to 425 fr.

Wire Products.—The market is stronger despite the recent increase of 100 fr. per metric ton.

	Fr.	
Plain wire, base....	1.175 to 1.200	\$58.75 to \$60.00
Galv. wire, base....	1.325 to 1.350	66.25 to 67.50
French nails, base..	1.225 to 1.250	61.25 to 62.50

Semi-Finished Steel.—A general tendency to increase prices is evident, with a slight scarcity of ma-

terial, and several steel works are booked to capacity and out of the market. The following prices are currently quoted for basic material per metric ton:

	Fr.	
Ingots	540 to 555	\$27.00 to \$27.75
Blooms	575 to 590	28.75 to 29.50
Billets	615 to 630	30.75 to 31.50
Tank plates	850 to 870	42.50 to 43.50

Iron Bars.—Demand for iron bars is fairly heavy, with new increases in prices as a result of the decline of exchange and the number of current orders: No. 2 bars are 700 to 725 fr.; No. 3, 750 to 775 fr., and No. 4, 850 to 875 fr. per metric ton.

Finished Material.—The price situation is very firm, with a persistent tendency to increase. Bars are particularly in demand, and transactions in beams are better.

	Fr.	
Bars	715 to 725	\$35.75 to \$36.25
Beams	690 to 715	34.50 to 35.75
Angles	715 to 725	35.75 to 36.25
Rods	875 to 900	43.75 to 45.00
Hoops	975 to 1,000	48.75 to 50.00
Rails	600 to 700	30.00 to 35.00

Sheets.—The market is steady with important demand in the heavy gages, which are generally dull. The following prices per metric ton are being quoted for various gages:

	Fr.	
5 mm. and heavier..	735 to 750	\$36.75 to \$37.50
2.0 and 3.0 mm.....	780 to 850	39.00 to 42.50
1.5 mm.	870 to 900	43.50 to 45.00
1.0 mm.	1,050 to 1,075	52.50 to 53.75
0.5 mm.	1,125 to 1,150	56.25 to 57.50

The Wickwire-Spencer Steel Corporation reports sales of \$16,300,571 for the half year ended June 30, against \$8,761,216 in the same period of the previous year. Total income, after all expenses, amounted to \$2,008,080, against \$929,166.

Plans of New Companies

Harmer, Inc., New York, has been incorporated for \$100,000 to manufacture arc lamps of the type used in the moving picture industry and other electrical equipment. The company is now manufacturing at a plant in Long Island City, N. Y., but hopes to establish a plant in New York at an early date. Further plans will be announced later. C. S. Ashley, 120 Liberty Street, New York, is representative.

The American Steam Specialty Corporation, New York, recently incorporated with a capital stock of \$10,000, will manufacture steam valves. It is now looking for a plant. L. J. Hamel, 206 Broadway, New York, is representative. The officers will be announced later.

The Mekelburg Specialty Corporation, New York, recently incorporated and capitalized for \$100,000, will import toys and specialties. The officers are Joseph Levie, president; Samuel Solomon, vice-president; and Joseph Mekelburg, secretary.

The Eureka Tinware Mfg. Co., New York, has been incorporated for \$25,000 to manufacture tinware and metal products. The company has a plant at 629 East Sixteenth Street, and is now making garbage cans and mail boxes. The company will be in the market soon for a double seamer and several presses.

The New Eagle Roofing & Sheet Metal Corporation, New York, recently incorporated with a nominal capital of \$5000, will operate a roof repair shop. L. B. Mark and W. Ostreicher, the incorporators, have not yet selected a shop. Herman Cohen, 38 Park Row, New York, is representative.

The Gill Clutch Corporation, New York, has been incorporated for \$400,000 under Delaware laws, with authorization to manufacture in New York. It has exclusive rights to manufacture and sell, in the United States and Canada, certain automotive products invented by E. R. Gill, inventor of Gill piston rings. The inventions include new types of clutches, transmission bands and spark plugs. It is claimed that the transmission band, which is for Ford cars, stops chattering and utilizes the full power of the engine because of its metal lining. It is stated that the spark plugs do not accumulate carbon and add to the mileage per gallon of gasoline. The corporation intends to manufacture by contract, and the contracts are being negotiated at the present time. The officers are: President, N. Randall Osborne, Scranton, Pa., also president Union Motor Car Co., that city; vice-president, E. R. Gill; secretary, E. R. Gill, Jr., both of Yonkers, N. Y.; treasurer and counsel, Harrison Osborne, New York. The corporation may be addressed at its laboratories, 10 Alta Avenue, Yonkers, New York.

The Bilrite Motor Equipment Co., New York, has been incorporated with a capital stock of \$10,000. It will manufacture all kinds of automobile equipment, and expects to rent a plant by Aug. 1, although much of the pressing and die work will be done by contract. The office of the company is at 822 Tenth Avenue for the present and the incorporators are B. Lehr, H. Lehr and R. F. Lecount.

The Art Craft Auto Lamp Mfg. Co., New York, recently incorporated with a nominal capital of \$5,000, is manufacturing automobile lamps at its plant at 141 West Fifty-fourth Street. The company plans some extension at an early date, with the installation of presses and stamping machines. The incorporators are M. Brook, I. Witkoff, and J. Putterman. Mr. Brook was formerly with the U. S. Auto Lamp Mfg. Co.

The Cagan Foundry Co., Brooklyn, maker of iron and other metal castings, incorporated with capital stock of \$10,000, has taken over the foundry of the Apollo Foundry Co., 76 Quay Street, Brooklyn.

The Murray Lighting Corporation, Brooklyn, recently incorporated for \$20,000, will open a store at 394 Rockaway Avenue, Brooklyn, to sell lighting fixtures and equipment. The corporation may extend later into the manufacturing field, H. R. Berlinicke, one of the incorporators, informs THE IRON AGE. The other incorporators are B. Wertheim and M. H. Rosenbloom.

The B. & S. Metal Products Corporation, Brooklyn, has been incorporated for \$10,000 to manufacture sheet metal goods and roofing. The corporation is still in an undeveloped condition, but the hope has been expressed that it will have goods on the market by the first of next year. G. S. Levine, 233 Broadway, New York, is representative.

The Macbeth Daylighting Co., New York, incorporated for \$10,000 with permission to increase to \$500,000, is a reorganization of the Artificial Daylighting Co., 227 West Seventeenth Street, manufacturer of lighting equipment and fixtures. A change in the officers of the company will be announced later.

The Marvel Gas Co., Crawfordsville, Ind., recently organized to manufacture acetylene gas plants and equipment, will purchase all materials and fixtures under contract. Its

equipment is sufficient for present needs. G. B. Luckett, of the Crawfordsville Shale Brick Co., Crawfordsville, heads the company.

The Overhead Door Co., 3629 Coliseum Avenue, Indianapolis, has been incorporated with \$200,000 capitalization, to manufacture door hangers and similar products. It will do its own manufacturing and is in the market for equipment. A plant is being sought somewhere in Indiana. Manufacturing at present is being done at Cass Avenue, Detroit. A. W. Bulk is vice-president and general manager.

Harlacher Brothers, Greenville and Arcanum, Ohio, recently incorporated to manufacture agricultural implements, will confine present activities to acting as sales representatives in these products.

The Groner Co., Inc., Phillipsburg, N. J., has been organized with capital of 1000 shares of no par stock as a reorganization of J. J. Groner & Co., formerly of Easton, Pa. It has a completely equipped foundry and is now manufacturing gray iron, semi-steel, brass, bronze and aluminum castings, large and small. There is also a pattern shop and a machine shop equipped with light and heavy tools for miscellaneous machine work. J. J. Groner is president and general manager; E. R. Yarnelle, American Horse-shoe Works, vice-president; J. L. Evans, Losey & Co., secretary; T. A. Mellon, Kuebler Foundries, Inc., treasurer.

The Orchard Fire-Pot Foundry Co., San Juan, Tex., recently organized to manufacture fire-pots and other castings, has let a contract for the erection of a building and is now in the market for foundry equipment. Address B. L. Miller, general manager.

The Essex Thermostat Co., 50 Washington Terrace, East Orange, N. J., recently organized to manufacture heat-regulating devices, for the time being will only repair and deal in these lines. Thomas E. Crone heads the company.

The Canton Metal Products Co., Canton, Ohio, has been organized to manufacture metal goods and is negotiating for the purchase of a Canton firm. Harry Nusbaum, 618 Renkert Building, is corporate representative.

The Circular Tool Co., Inc., 51 Beaufort Street, Providence, R. I., has been organized to manufacture circular saws, metal slitting saws, screw slotting saws and special cutters. All manufacturing will be done in the company's shop. After August 1, headquarters will be at 71 Willard Avenue. W. B. Hopkins, formerly vice-president and general manager of the Thurston Mfg. Co., is general manager. The superintendent, G. A. Swanson, and sales manager, G. H. Nye, both held respective positions with the Thurston company.

Russell & Co., Inc., St. Joseph, Mo., has been incorporated with capital stock of \$50,000 to manufacture farm implements and equipment. This will be a branch office of the Russell company with headquarters at Massillon, Ohio.

The North Judson Steer-Well Corporation, North Judson, Ind., has been organized to manufacture safety devices for automotive use. The company expects to do its own manufacturing and now has part of its equipment installed. Francis E. Vaughn heads the company.

The Wolverine Specialty Co., Inc., Battle Creek, Mich., has been incorporated with capital stock of \$25,000 to manufacture automobile equipment and parts. It has equipment and will do its own manufacturing for the time being. Later on this work may be done by contract and the company is interested in hearing from companies equipped to do this kind of work. D. G. Wells is president.

The Elk Machine Tool Corporation, 165 Broadway, New York, has been organized to take over the assets of the Elk Mfg. Co., New York. The new company, capitalized at \$112,000, will continue to manufacture and sell precision tools formerly made by the old company under the Elkin patents. The company will be located July 15 in a new plant at 243 West Seventeenth Street. This plant is now being equipped with modern machinery for quantity production of high-grade precision tools. Representative and branch offices will be maintained in several large cities throughout the country. Its chief products will consist of machine tools for shaving, burnishing and squaring bearings used in internal combustion motors, valve-lifters, air-compressors and other precision tools. J. G. Elkin is president of the company.

The combined Motor Truck Repair Co., New York, was recently incorporated with capital stock of \$10,000, and will operate a general machine and repair shop. The incorporators are G. Vitello and J. and C. A. Motto. Address care of Kramer, Bourke & Galgano, 120 West Forty-second Street, New York.

The Brandes Products Corporation, 237 Lafayette Street, New York, has been incorporated with capital stock of \$250,000 to manufacture radio products for C. Brandes, Inc., New York. Property has been purchased at 196-204 Mt. Pleasant Avenue, Newark, N. J. The company will occupy

a building with total floor space of 46,000 sq. ft. and eventually will employ about 1000 persons. Frederick Dietrich is president.

The Defiance Lantern & Stamping Co., 33 Hebard Street, Rochester, N. Y., has been incorporated with capital stock of \$100,000 to take over a business established since 1901 in the manufacture of tubular lanterns and similar products. The business will continue as formerly with W. H. F. Russell as president and J. D. Henry as manager.

The Freed-Gross Iron Works, Inc., Richmond, S. I., recently was organized to operate a general steel and iron works. Immediate business will be on a small scale. The incorporators are F. and M. Cross and F. Crook. Address care of A. B. Hertz, 51 Chambers Street, New York.

The Russell Cooling System, Inc., Philadelphia, has been organized to manufacture a cooling system and to deal in iron and steel and machinery. Manufacturing for the first few years will be done by contract. Edwin J. Russell is president, Harold W. Fullmore, vice-president and general manager, and Robert A. Barr, secretary-treasurer.

The Hugh Co., Inc., 190 Elk Street, Buffalo, has been incorporated with capital stock of \$25,000 to manufacture sheet metal and products. The company is in the market for equipment including electric spot welders, punch presses, drill presses, etc. Its products will consist of foundry chaplets, special stampings for bed-steam manufacturers, film carrying cases, metal cabinets, tanks, etc. E. Hugh heads the company.

The Hampton Roads Iron Works, Inc., Newport News, Va., has been incorporated with capital stock of \$25,000 to operate a general iron and steel works. Its operation will be conducted on a limited scale. W. B. Colonna, Newport News, is secretary.

Edward F. Goltra and his associates in the Mississippi Valley Iron Co., whose furnace in Carondelet, St. Louis, has been down for several years, have organized the Riverside Coke & Iron Co., with a capital stock of \$250,000. Mr. Goltra said that the new company would act as a sales agency for the by-product coke made at this furnace when it is blown in again.

Albert Weber, Inc., New York, has been incorporated for \$50,000. Mr. Weber will act as consulting engineer and general contractor. His present address is at the Progress Engineering & Machine Works, 421 East Fifty-third Street, New York, of which he is part owner.

Wills-St. Claire, Inc., Boston, has been incorporated in Massachusetts as a branch of the Marysville, Mich., company, to manufacture automobiles. Authorized capital consists of 50,000 shares 7 per cent cumulative preferred, 50,000 6 per cent first and like amount of second preferred, all of \$100 par value, and 400,000 shares no par value. Incorporators are: President, Asa B. Nelson, Cambridge, Mass.; treasurer, Dunbar S. Carpenter, Winchester, and John C. Rice, Dedham.

The Brakman Electric Co., care of W. W. Armstrong, Powers Building, Rochester, N. Y., has been incorporated with capital stock of \$50,000 to manufacture electrical equipment. No construction is contemplated at this time. The incorporators are: R. J. Jauss, A. L. and C. Brakman, Rochester.

Trapani & Cagliostro, Inc., New York, has been incorporated to operate a general machine shop. The incorporators have operated a shop for four years. Up until a few months ago they were located on Mulberry Street. The firm now has a much larger plant at 147 Baxter Street. Since the move, much equipment, including lathes and punches, has been added, but no further additions are likely for some time. The firm is very busy at the present time, continuous 12-hr. shifts being the rule. The main products are several types of metallic and semi-metallic fruit presses. A. J. Cagliostro, one of the incorporators, also conducts an electric wiring service.

The General Accessories Co., organized to manufacture automotive accessories, has taken over the plant, die casting equipment and business of the Briscoe Devices Corporation, Pontiac, Mich., and is negotiating to take over two other plants in Michigan, which will be operated in conjunction with the Pontiac plant, manufacturing for the General Accessories Co. and also for the general trade. Frank Briscoe, pioneer radiator manufacturer, is president; Emil D. Moessner, formerly with the Ford Motor Co., is business manager; Howard G. Harris, Howard G. Harris Co., Detroit, is vice-president.

The Retherford Mfg. Co., 109-11 North High Street, Muncie, Ind., has been incorporated with capital stock of \$50,000 to acquire the enterprise of R. M. Retherford in the manufacture of lighting fixtures and equipment. The company has a factory sufficiently equipped to supply present needs. R. M. Retherford heads the company.

The Highland Machine & Foundry Co., Alexandria, Va., has been incorporated with capital stock of \$200,000 under Delaware laws, to manufacture castings, patterns, stampings and automotive devices in iron, brass, bronze and aluminum. Contract has been let for the construction of a number of small buildings on the plot of 40,000 sq. ft. recently purchased by the company. Only a small part of the machinery has been purchased. It is proposed to devote considerable time to making the necessary dies and in general preparation for quantity production. H. Adams, is president; R. H. Baur, secretary-treasurer, and C. R. Kline, general manager.

The Lebanon Brass Works, Lebanon, Pa., recently incorporated with capital stock of \$20,000 has purchased a plant and is already equipped for non-ferrous foundry work and nickel plating. The company is in the market for a pyrometer. Richard Drew heads the company.

Holstein-Harvey Terminal, Inc., organized under Delaware laws, is planning the erection of an eight-story warehouse at Wilmington, Del. The officers of the company will be: Morton Harvey, president; Perlee C. Sisler and Henry T. Bush, vice-presidents; William H. Pollock, secretary.

The Waynesboro Nut Lock Co., Inc., Waynesboro, Pa., has been incorporated with capital stock of \$100,000 and has leased a plant at Waynesboro for the manufacture of lock washers, having taken over the patents, trade marks and other assets of the Bull Dog Lock Washer Co. of Baltimore. Equipment formerly owned by the Baltimore company will be used. The officers are: W. S. Bostwick, president; Mark A. Landis, vice-president; Chester A. Lyon, treasurer; O. M. Peters, secretary and general manager.

The Collins Concrete Pipe Co., Portland, Ore., has been organized to manufacture concrete piping, having taken over a small manufacturing plant which has been in operation for some time. It will do its own manufacturing. Address care of Lewis, Lewis & Finnigan, 414 Couch Building, Portland, Oregon.

The Ramsey Chain Co., Inc., Albany, N. Y., has been incorporated with capital stock of \$300,000 to manufacture chains for transmission service. J. H. Ramsey and A. D. and E. D. Farrell are incorporators. Address care of N. F. Towner, 126 State Street, Albany.

The Automotive Equipment Co., Portland, Ore., announces that it will confine present activities to conducting a jobbing business. Address care of Frederick H. Drake, Title and Trust Building, Portland.

The Yatman Rubber Corporation, 267-71 Mt. Pleasant Avenue, Newark, N. J., recently incorporated with capital stock of \$100,000 to manufacture rubber products is planning to purchase a new plant and additional equipment within the next 12 months, during which time its lease will expire. Orvis L. Gonzalez is president and treasurer.

The Buffalo Newton Rifle Co., 1081-85 Ellicott Square, Buffalo, has been incorporated with capital stock of \$125,000, and will manufacture firearms, ammunition and supplies. Small parts, such as are made on automatic screw machines and punch presses, will be let out to contract. All other operations will be done in the company's plant. It is now in the market for equipment and hopes to be on a production basis by fall. Charles Newton is president.

The Fireite Extinguisher Co., with general office and factory at Masontown, Pa., has been incorporated under Delaware laws, capitalized at \$500,000, and will manufacture fire extinguishers. It is now in the market for hot rolled pickled steel, 2½ in. wide by 0.035 gage. The company will do its own manufacturing. William L. Graham is president; E. S. Graham, vice-president; E. W. S. Graham, secretary-treasurer.

The Moraine Products Co. has been organized under Ohio laws as a subsidiary of the General Motors Corporation to develop at Dayton, Ohio, some of the products which have passed the experimental stage. It will be the function of the company to determine the merits of a product in terms of large scale production. C. F. Kettering, president General Motors Research Corporation, will be president of the new company also.

Southern Bearing Co., Inc., 3030 South Twentieth Street, Birmingham, Ala., has been organized to manufacture ball bearings but for the present will confine activities to the function of distributor in these lines. G. E. Woodward heads the company.

The Surplus Steel & Iron Service, with offices at 327 South LaSalle Street, Chicago, has been organized to act in the capacity of purchasing and sales agent in the handling of surplus steel and iron. Lists of surplus material will be printed and mailed to steel consumers. The manager of the company is F. X. Devlin, formerly purchasing agent of the National Tube Co., and Spang, Chalfant & Co., Pittsburgh. W. W. Decker, also a member of the firm, was for many years associated with the Cleveland Cooperative Stove Co.

Trade Changes

The Imperial Brass Mfg. Co., Chicago, manufacturer of brass specialties and oxy-acetylene welding and cutting equipment, has opened a branch office in the House Building, Pittsburgh, under the management of John A. Coyle, who for 25 years was actively connected with the high grade steel making industry, with the Crucible Steel Co. of America, the Baldwin Steel Co., the Hess Steel Castings Co., the National Drawn Steel Co. and, recently, with the Universal Steel Co. Associated with Mr. Coyle will be Elmer H. Miche, who will specialize on oxy-acetylene welding and cutting apparatus.

The Thos. H. Dallett Co., Philadelphia, has purchased a new factory, which affords greatly enlarged quarters, at 165-89 West Clearfield Street.

The Swedish Charcoal Steel Producers, Inc., which for the past three years has had an office at 165 Broadway, New York, has changed its name to the Swedish Charcoal Steels, Inc. The company specializes in the sale of Swedish alloy steels for use in the manufacture of cutlery, bearings and other products requiring high-quality steel.

The American Stainless Steel Co. has changed its address from 1541 Oliver Building to 806 Commonwealth Building, Pittsburgh.

N. A. Strand & Co., formerly at 5001-9 North Lincoln Street, Chicago, has moved into its new building at Lincoln and Argyle Streets.

The J. E. Dilworth Co., Inc., 493 South Main Street, Memphis, Tenn., has been appointed representative in the Memphis and Vicksburg territories for the Chicago Belting Co., Chicago.

The E. S. Stacy Supply Co., 41-3 Taylor Street, Springfield, Mass., has been made exclusive distributor in Massachusetts and Connecticut for Blue Oak handles manufactured by the Curtis Handle Co., Fort Madison, Iowa.

The Chicago warehouse of the Latrobe Tool Co., manufacturer of high speed drills and reamers, Latrobe, Pa., has been moved to 1440 West Lake Street, Chicago.

J. N. Moyer, dealer in new and used machine tools, specializing in power presses, has moved from 119 North Third Street, Philadelphia, to 117 North Third Street. The considerable additional space enables Mr. Moyer to have his shop, showroom and offices combined.

W. H. Harris & Co., dealer in coal and coke, Fisher Building, Chicago, has been appointed sales agent for the Chicago By-Product Coke Co., Chicago. The plant of the Chicago By-Product Coke Co. consists of 100 Koppers ovens with a daily capacity for carbonizing 2000 tons of coal. The coke requirements of the Peoples Gas Light & Coke Co., Chicago, are supplied from this plant and some of the coke is used at the plant for the manufacture of gas. The surplus tonnage, after supplying those needs, amounts to approximately 250,000 tons annually and this tonnage will be sold on the general market for industrial and domestic purposes. Both furnace and foundry coke will be offered to the industrial trade. J. A. Galligan, vice-president, W. H. Harris & Co., formerly identified with Pickands, Brown & Co., and the By-Products Coke Corporation at Chicago, will devote particular attention to the sale of foundry coke.

The Cincinnati Machinery & Supply Co., used machinery and supplies, has moved from 1322 Central Avenue to its new five-story building at 216 East Pearl Street, Cincinnati.

Joseph Hyman & Son, Tioga, Livingston and Almond Streets, Philadelphia, have changed their address to Richmond Street and Erie Avenue.

Allen E. Stillman, Inc., 805 Lexington Avenue, Brooklyn, announces that A. P. Stillman has disposed of his interest in the firm and severed his connection with them. Albert A. Allinger is president.

The Griffin Mfg. Co., Erie, Pa., has purchased the Steel Products Mfg. Co., and the Walker Foundry Co. property which adjoins its plant. This affords nearly double the ground room available for future expansion.

The Vanadium Alloys Steel Co. will move the Pittsburgh sales office from First and Ross Streets to the Oliver Building, Pittsburgh, effective Sept. 1.

John D. Cronenweth, president Great Lakes Distributing Co., Detroit, producer and shipper of foundry sands, has recently been elected to the board of directors of the Lancaster Coal & Sand Co., New Lexington, Ohio, which has holdings in New Lexington, Ohio, with capacity of 15 cars of No. 4 milled molding sand per day. The Great Lakes Distributing Co. will have the exclusive handling of the output of this product in the future.

W. S. Rulison, who has been connected with the iron and steel business for more than 30 years, has severed his connection with the W. F. Robertson Steel & Iron Co., Cin-

cinnati, and has opened offices at 605 First National Bank Building, Cincinnati, for the sale of iron and steel products.

Wyckoff Drawn Steel Co., Pittsburgh, announces the opening of a Philadelphia office in charge of E. H. Carmany, district sales manager, at 711 Atlantic Building.

Pilling & Co., Inc., exclusive sales agents for Wrigley's Southern charcoal iron made by the Bon Air Coal & Iron Corporation, Nashville, Tenn., have designated Walter Wallingford & Co., Oliver Building, Pittsburgh as Pittsburgh district sales agents for this brand of semi-cold blast charcoal iron.

Frank J. Jarecki has purchased the Manhattan Machine & Tool Works, dies, special machinery, screw presses and grinders, of which he was president and manager, and is now doing business under the style Jarecki Machine & Tool Co., at the same location, 40-50 Market Avenue, N. W., Grand Rapids, Mich.

The V. & O. Press Co., designer and manufacturer of dies, presses and special machinery, Glendale, Brooklyn, N. Y., has moved into its new plant at Hudson, N. Y.

The Stowe-Fuller Refractories Co. Acquires Other Companies

The Stowe-Fuller Co., the National Fire Brick Co. and the Minor Fire Brick Co., which have for many years been engaged in manufacturing and selling fire brick and refractory materials, have lately been consolidated into a single company under the name the Stowe-Fuller Refractories Co., which began operations as of July 2, 1923, and will conduct the business heretofore carried on by the above-named companies.

The Stowe-Fuller Refractories Co. has also acquired a controlling interest in the Federal Refractories Co., manufacturer of silica, magnesite and chrome brick, and will handle the output of the Open Hearth Fire Brick Co., the Zoar Fire Clay Co., the Lock Haven Fire Brick Co. and the Hite Coal & Clay Co. This makes this company self contained and in a position to mine, manufacture and supply every class of refractory material required by a steel plant and other manufacturers requiring different refractory fire brick materials for their special work.

The management of the company will continue in the hands of the same officers who have heretofore operated the various properties. Charles B. Stowe is the chairman of the board of directors of the new company, Charles E. Kapitzy is the president; Thomas Kemp, the first vice-president and operating manager; Joel H. Fuller, the second vice-president, and Charles J. Steitz is the secretary.

Industrial Items

The Ohio Edison Co., Sharon, Pa., a Delaware corporation, has arranged for a change of name to the Penn-Ohio Edison Co., at the same time increasing its capital to \$37,500,000. A note issue of \$3,250,000 is being sold, a portion of the proceeds to be used for the acquisition of properties in this section and power plant extensions. The company will operate the Ohio River Edison Co., which is perfecting plans for a hydroelectric power house on the Ohio River, near Toronto, Ohio, to cost approximately \$10,000,000. James D. Andrews is president.

The Dells Paper & Pulp Co., Eau Claire, Wis., will invest \$400,000 in enlarging its mills, hydroelectric generating plant and pumping capacity, and has engaged L. A. DeGuere, engineer, Wisconsin Rapids, Wis., to undertake the project as designer and contracting engineer. The turbo-generating equipment will be furnished by the Allis-Chalmers Mfg. Co. Inquiry is being made for paper and pulp machinery, motors, scales, grinders, crushers, etc. L. E. Davis is president and general manager.

Receivers have been asked for eight subsidiary companies of the R. L. Dollings Co., including the American Motor Truck Co., Newark, Ohio, Champion Engineering Co., Kenton, Ohio, Matthews Engineering Co., Sandusky, Ohio, and the Recording Devices Co., Dayton, Ohio. C. H. Spencer, Newark, has been appointed receiver for the American Motor Truck Co., but no action has yet been taken in regard to any of the other companies.

The Associated Holding Corporation, New York, has obtained exclusive American rights to manufacture and sell the Voss molding machine, now being manufactured and used in Germany. Unique features are claimed for the machine and the corporation is trying to make arrangements to have it manufactured in this country by some company already making machinery of that type. The secretary of the corporation is J. Oppenheim, Room 705, 729 Seventh Avenue, New York.

STEEL AND INDUSTRIAL STOCKS

Steel, Under Pressure, Breaks to New 1923 Low Following Violent Fluctuations in List

In the violent fluctuations of steel and industrial stocks last week there is represented to some extent the indecision and inaction of the dull season, and to some extent the disappointment over the critical conditions beyond the Atlantic. While there was a pause to catch breath before determining what future course to pursue, aggressive professional selling started rolling the ball of liquidation. Trading was usually done on a small scale owing to the uncertainty. In the last days there came acute weakness and some activity. Pressure was particularly upon steel stocks and Steel common broke to 86%, a new 1923 low. This figure is only about four points above the 1922 low. It is believed that the precipitous decline was the result of professional attacks and selling by traders.

The range of active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

Low High		Low High	
Allis-Chalm.	38½ 42%	Inland Steel	33½ 34
Allis-Chalm. pf.	90% 92	Int. Har.	72% 77
Am. B. S. & Fdry. 70	73	Int. Har. pf.	108½ 109
American Can.	86¼ 92%	Lima Loco.	61 64%
American Can pf. 109	109	Midvale Steel	24 25½
Am. Car & Fdry.	154% 160	Nat.-Acme	10% 11
Am. Locomotive.	66% 70%	Nat. E. & Stm.	56½ 62
Am. Locomot'f pf. 119	119	N. Y. Air Brake. 31	33½
Am. Radiator.	79 81	Otis Steel	8 8%
Am. Steel Fdries.	33% 35%	Otis Steel pf.	48 48
Baldwin Loco.	112½ 123%	Pressed Stl. Car.	52½ 56
Baldwin Loco. pf. 113	113	Ry. Steel Spring.	100% 103%
Bethlehem Steel.	45% 49%	Replogle Steel.	10% 14%
Beth. Stl. 7% pf.	87½ 89	Republic	42 46%
Beth. Stl. 8% pf.	102 102	Republic pf.	93 93
Br. Em. Steel.	7¼ 7%	Sloss	43½ 46½
Br. Em. S. 2d pf.	19½ 20	Steel of Canada.	70 70
Cambria Iron.	41 41	Steel & Tube pf.	105 106½
Chic. Pneu. Tool.	79% 81	Superior Steel	24 24½
Colorado Fuel.	25 28%	Un. Alloy Steel.	30 31
Crucible Steel.	59 67	U. S. Pipe.	24 27½
Crucible Steel pf.	87 87	U. S. Pipe pf.	68 68½
Deere pf.	62¼ 63¼	U. S. Steel.	86% 92%
General Electric.	172% 176¼	U. S. Steel pf.	117% 118
Gt. No. Ore Cert.	26% 29%	Vanadium Steel.	31½ 36
Gulf States Steel.	67% 74½	Va. I. C. & Coke.	55 55

Industrial Finances

Vanadium Corporation of America reflects in its six months' report the depression abroad. Net for 373,334 shares was only \$1.03 a share, but this is 28c. better than the latter half of 1922, and \$1 better than the corresponding period of 1922. Cash assets on June 30 were nearly double those of Dec. 31, \$1,602,221 against \$801,842, and compare with \$197,965 a year ago.

Replogle Steel Co. in its second-quarter statement (including Wharton & Northern Railroad Co. and Ferro Monte Railroad Co., but excluding Empire Steel) shows a deficit of \$18,741 and a deficit for the first half-year of \$112,274. This compares with a deficit in the quarter ended March 31 of \$93,553.

Plans of New Companies

The American Metal Novelty Co., New York, has been incorporated with a nominal capital of \$5,000. The incorporators, M. Glaser and H. Inker, have manufactured brass and copper novelties at 51 Pike Street for four years and the new company will continue the business. The shop has been renovated, but no additions of machinery are contemplated.

The Printape Machine Corporation, New York, recently incorporated with \$10,000 capital, has a fully equipped plant in Brooklyn and offices at 80-82 Greene Street, New York. The corporation is manufacturing and putting on the market a device which prints on one side and wets the gummed side of paper adhesive tape used to hold together corrugated paper boxes. The device operates as the tape is used from a roll. The incorporators are A. Honigstock and H. C. Wolfe.

The Mott Haven Fireproof Door Co., New York, recently incorporated for \$25,000, will manufacture fireproof doors, window sashes, etc. The company is now looking for a plant, and when one is secured will be in the market for equipment. J. Snyder, N. Rosmer, and B. Moses are incorporators, and the company may be reached through its representative, Emanuel Morganlander, 1540 Broadway.

The Henning Automatic Safety Gas Hose Co., Brooklyn, has been incorporated with capital stock of \$10,000. The company is now manufacturing gas valves and hose at its plant at 235 Duffield Street, Brooklyn. It is claimed that the products make gas leakage accidents impossible because they automatically shut off the gas upon any break or separation of the hose from the valves. Considerable extension

of the plant, with installation of new equipment, is contemplated. The incorporators are G. and F. G. Henning.

The Hydrolea Heater Corporation of America, 1803 Times Building, New York, has been incorporated with capital stock of \$500,000 to manufacture heating devices, including generator-burners. All manufacturing is being done under contract. O. E. Culbert is secretary.

The Anderson Radio Corporation, Newark, N. J., has been incorporated with capital stock of \$250,000 to manufacture and deal in wireless equipment. The manufacturing phase of the business has not been definitely determined yet. Address care of William Anderson, 38 Park Place, Newark.

The Supra Spark Plug Co., care of William M. Goldweber, 1 Exchange Place, Jersey City, N. J., has been incorporated with capital stock of \$250,000 to manufacture spark plugs and kindred automotive equipment. It has a plant and expects to be ready for initial operations in two weeks. Manufacturing will be done on a moderate scale at first. Frank H. Snook heads the company.

The Leach Steel Corporation, 1335 Main Street, Buffalo, has been organized to manufacture steel structures. Construction will soon be started on a building for the storage of corrugated sheets and steel sash. This work the company will do itself. Next spring it will build a structural fabricating shop. Thomas Leach is president.

The Automatic Transportation Co., care of Thomas E. Boyd, 440 Prudential Building, Buffalo, has been incorporated with capital stock of \$2,000,000 to acquire an established business in the manufacture of trucks, tractors, etc. It has a complete plant for this line of work, which will be continued, as formerly. The incorporators are: W. C. Carr, E. L. Kleindinst and J. H. Prescott.

The Hallett Mfg. Co., care of Frederick V. Winters, 1133 Broadway, New York, recently incorporated with capital stock of \$100,000 to manufacture vacuum equipment, is holding its plans in abeyance pending a decision on certain matters of policy. A. Schirmann, 547 East Eighty-fourth Street, is secretary.

The McVoy Sheet & Tin Plate Co., 344-50 West Austin Avenue, Chicago, has been formed as a reorganization of the business conducted since 1877 by Eugene J. McVoy in sheets, tank steel, tin and terne plate, sheet copper and zinc. Capital employed will be approximately \$1,000,000. Plans are not fully completed. Warehouses are maintained at Chicago and Pittsburgh, and its New York office is at 2042 Grand Central Terminal Building. Mr. McVoy is president of the corporation.

The Schrell-Schultz Co., with office at 7 East Forty-third Street and factory at 225 East Thirty-sixth Street, New York, has been incorporated with capital stock of \$100,000 to manufacture and deal in drawing instruments and materials. The business formerly conducted by H. J. Schultz in the manufacture of engineers' and draftsmen's instruments has been taken over by the new company, and F. V. Schrell, formerly of Schrell & Brock, manufacturer in a similar line, has been taken into the firm. The incorporators are: H. J. Schultz, F. V. Schrell and C. D. Donohue.

The Quinplex Radio Corporation, 233 West Forty-second Street, New York, has been incorporated with capital stock of \$500,000 and will manufacture wireless equipment. Present developments are yet in the formative stage. The incorporators are: M. L. Lewis, A. Wellman and M. Christeleit. Conrad Milliken, 36 West Forty-fourth Street, New York, is corporate representative.

The Johnson Equalizer Corporation, care of Morrell, Bates & Topping, 27 Cedar Street, New York, has been incorporated with capital stock of \$200,000 to manufacture springs, shock absorbers and kindred products. Contracts are now being placed for manufacturing, all of which for the present will be done in this way. The company may consider manufacturing for itself later on. The incorporators are: G. M. Hessler, J. H. Bay and A. Palmer.

The Carlson-Sharp Co., Inc., Dover, N. J., has been incorporated with capital stock of \$125,000 and will manufacture roofing materials. Definite plans as to method of manufacture are lacking. Address care of Lyman M. Smith, Dover.

The Sands Mfg. Co., Sweeney Avenue and Erie Railroad, Cleveland, recently incorporated to manufacture gas tank water heaters and automatic instantaneous water heaters, has completed an addition to its factory and has placed all contracts to cover its present needs. L. Sands is president; J. M. Sands, vice-president; and Garry Sands, secretary-treasurer.

The Motor & Machinery Castings Co., 7742 West Division Avenue, Detroit, has been incorporated, capitalization \$35,000, to manufacture castings. At present it is working on gray iron and semi-steel castings. Orders on hand will keep the plant at capacity for some time. J. H. Barron is president.

Machinery Markets and News of the Works

JULY A LEAN MONTH

Sales Generally Not Up to Average of Preceding Months

Foreign Inquiry for Several Tools—Big Four Railroad Issues List

July has been a lean month and in comparison with previous months of the year may be said to be below the average. The past week has been very quiet for the most part, although in the Cincinnati district fair activity is noted. Automotive parts manufacturers have made purchases in Cincinnati and a good order for lathes was received from the Detroit district.

Among inquiries during the week is a request for prices on more than 25 tools, including 12 engine lathes, which has been received from the Instituto de San Bernardo, Bogota, Colombia.

The Big Four Railroad has issued a list of 10 tools for the Urbana shops and the Pennsylvania Railroad took bids July 25 on 14 lathes for its St. Louis shops. A short list is expected from the Lehigh Valley Railroad and orders for a few tools are looked for from the Illinois Central this week.

The Cleveland Board of Education has issued a list of 16 machines and considerable small miscellaneous equipment for the woodworking, sheet metal and electrical departments of the West Technical High School, for which bids will be received Aug. 3.

New York

NEW YORK, July 31.

WITH the exception of slight activity on the part of the railroads, the machine-tool market in this district is extremely quiet. Among the railroads, the Lehigh Valley is reported as on the point of issuing a short list of tools. The list of the Baltimore & Ohio includes about 10 tools. A request for prices on lathes, milling machines, planers and grinders and other equipment for a machine shop has been received from the Instituto de San Bernardo, Bogota, Colombia. The list includes 12 engine lathes, one precision lathe, one turret lathe, one automotive parts grinding machine, two sensitive drills, two portable electric drills, one tool grinder, one planer, two milling machines, one threading machine, one hydraulic shaft-straightening machine, one universal cutter grinder and three oil furnaces.

Contract has been let by the American Can Co., 120 Broadway, New York, to the Lindgren Co., Monadnock Building, San Francisco, for a two-story addition to its plant at Third Avenue and Twenty-first Street, San Francisco, to cost \$300,000 including machinery.

Montemayor & Co., 24 State Street, New York, are desirous of getting in touch with manufacturers of soft or mild steel tubes, black, for columns, 1½ to 3 in. outside diameter, 13 to 20 ft. long, without solder, weldless, cold or hot drawn; also with manufacturers of welded steel tubes, 1 in. outside diameter and smaller, about 13 ft. long, black, soft, mild steel, suitable for making hames.

The Memco Engineering & Mfg. Co., 24 Vanderbilt Avenue, Brooklyn, manufacturer of electrical devices and equipment, has leased the factory at Hamilton and Freeman Avenues, Long Island City, for a new plant.

Johns-Manville, Inc., Madison Avenue and Forty-first

The Pollak Steel Co., Cincinnati, has taken bids on metal-working machinery, including punches and shears and some presses. Awards for equipment for the new Baltimore plant of the Standard Sanitary Mfg. Co. are expected. Samuel Diescher & Sons, Pittsburgh, are the engineers on this work.

Purchasers include the Pennsylvania Railroad, which continues to take miscellaneous tools for various shops. The Chicago & North Western has also bought. The Santa Fe and the Union Pacific have placed a few more orders, and now have bought most of the machines for which they recently inquired.

The equipment for the new plant of the Pebbles Engineering Co., Newton Falls, Ohio, is reported to have been awarded, the bulk of the business being placed with a Cleveland dealer.

In the automotive field the Hudson Motor Car Co. has commenced to place orders for equipment for the enlargement of its Essex plant. No general list has been issued. The company is now buying large special machines and later is expected to place orders for smaller machines of standard types.

The Shipping Board took five engine lathes and the American Can Co. five shapers. The list of the Montreal Harbor Commission has all been practically purchased. The Railway Steel Spring Co., which is erecting a large shop at Latrobe, Pa., plans to transfer its equipment and does not expect to have to purchase many new tools.

Street, New York, manufacturer of roofing, asbestos products, etc., has authorized plans for the erection of a new one-story plant, 150 x 1000 ft., at Asbestos, Que., to cost \$300,000 with machinery.

Ovens, power equipment, conveying machinery, etc., will be installed in the new baking plant to be built by Wiegman Brothers, Inc., 150 East Twenty-second Street, at 334-42 East Twenty-seventh Street, 120 x 130 ft., to cost \$100,000.

The Fort Miller Pulp & Paper Corporation, Fort Miller, N. Y., has plans for the erection of a one-story addition, 45 x 125 ft., estimated to cost \$200,000 with machinery.

The Staten Island Edison Corporation, St. George Terminal, Tompkinsville, S. I., is being organized to acquire and expand the electric light and power interests of the Richmond Light & Railroad Co., now in receivership. The new company will be headed by J. H. Pardee, president of the existing company, and will operate the electric railroad system as a separate subsidiary. Extensions will be made in power plant and system.

The Victoria Falls & Transvaal Power Co., Ltd., Johannesburg, S. A., has plans for a new electric generating station in the Witbank coalfield district, estimated to cost \$5,000,000 with steel tower transmission system. A considerable portion of the machinery will be purchased in America, and engineers for the company will come to this country for such purpose. Plans have been filed with the Electrical Equipment Division of the Bureau of Foreign and Domestic Commerce, Washington, and are available for inspection.

John D. Parsons, Inc., 93 North Pine Avenue, Albany, N. Y., manufacturer of store fixtures, etc., is planning to rebuild the portion of his plant on Hamilton Street recently destroyed by fire with loss of about \$175,000 including equipment.

A manual training department will be installed in the new three-story high school to be erected at Scotia, N. Y., estimated to cost \$250,000, for which bids are being taken on a general contract. J. M. Ryder, Parker Building, Schenectady, N. Y., is architect.

The Municipal Gas Co., 126 State Street, Albany, N. Y.,

The Crane Market

The market on overhead cranes has been quiet this week but there has been some activity in purchases of locomotive cranes. An inquiry for a locomotive crane for export to Japan is reported from several Japanese export houses, among which are Takata & Co., 50 Church Street, New York, and Mitsui & Co., 65 Broadway, New York. One of the large locomotive crane purchases recently made was that of the New York Central & Hudson River Railroad, which closed on four 20-ton locomotive cranes with the Industrial Works. This brings the total purchases of this railroad in the past fortnight or more to nine cranes, a previous list of five 20-ton cranes, three with magnets and two with grab buckets, having been awarded to the Brown Hoisting Machinery Co. In overhead traveling cranes, the Pennsylvania Railroad, Eastern Region, Philadelphia, is reported to be receiving bids on a 15-ton gantry crane and a 5-ton overhead traveling crane. It is stated that the buildings being constructed for the General Electric Co. at Philadelphia by the White Construction Co., New York, will involve 10 or more overhead cranes, inquiry for which has not yet been issued. Export demand for overhead cranes seems to be particularly active. Among current inquiries is a request for bids on a 25-ton and a 40-ton, about 33-ft. span, overhead traveling crane for Japan, from Okura & Co., 30 Church Street, New York. Another export inquiry, issued by both the Wingham Bates & Goode Trading Corporation, 251 Fourth Avenue, New York, and Hill & Buechner, 315 Fourth Avenue, New York, calls for bids on a 7½-ton jib crane with 30-ft. jib and alternate quotation on a 5-ton jib crane. The China-Japan Trading Co., 115 Broad Street, New York, is receiving quotations on a 5-ton, 3-ton and 2-ton, electric traveling crane, all 28-ft. span, and an inquiry for a 10-ton, 50-ft. span, and 5-ton, 30-ft. span, overhead traveling crane is reported to have been issued by Mitsui & Co., 65 Broadway, New York, and Andrews & George Co., 50 Church Street, New York.

Among recent purchases are:

will commence the construction of a three-story electric power house, 25 x 60 ft., to cost approximately \$125,000 with equipment.

A machine shop and parts department will be installed in the new ten-story building, 60 x 140 ft., to be erected at Albany, N. Y., by the E. V. Stratton Motors, Inc., Washington Avenue, estimated to cost \$200,000. Bids will be asked early in the fall. Strickland, Blodgett & Law, 7 Washington Avenue, are architects.

The United States Army, Quartermaster Department, Camp Alfred Vail, N. J., will take bids until Aug. 15 for two drilling machines, one lathe and one variety saw bench, proposal 1.

The New Jersey Power & Light Co., Dover, N. J., will build a one-story power house at Bloomsbury, N. J.

Bids will be received by the Board of Commissioners, Haddonfield, N. J., until Aug. 16 for one electrically operated pump and auxiliary equipment for a new sewerage pumping

L. H. Shattuck, Manchester, N. H., a 5-ton, 20-ft. span, double I-beam crane from the Whiting Corporation.

General Electric Co., Schenectady, N. Y., a 20-ton, 42-ft. span, rope drum overhead traveling crane from the Whiting Corporation.

The Texas Co., 17 Battery Place, New York, a 20-ton, 1-motor, overhead traveling crane from the Nilek-Bement-Pond Co.

American Brass Co., Waterbury, Conn., several small cranes for Waterbury and Western plants, from the Pawling & Harnischfeger Co.

Hickman-Williams & Co., Chicago, Ill., a 25-ton locomotive crane from the Industrial Works.

New York Central & Hudson River Railroad, New York, four 20-ton locomotive cranes from the Industrial Works.

Phoenix Utility Co., 71 Broadway, New York, a 30-ton locomotive crane from the Brown Hoisting Machinery Co., order placed in New Orleans.

Arthur McMullen Co., 50 Church Street, New York, a 20-ton locomotive crane for use on contract in New York State, from the Brown Hoisting Machinery Co.

Rockland Light & Power Co., Nyack, N. Y., through Charles H. Tenney, engineer, Boston, a 25-ton used Browning locomotive crane from the Grey Steel Products Co., New York.

Standard Gauge Steel Co., Beaver Falls, Pa., one 5-ton special type, 3-motor, overhead crane with span of 21 ft. 5 in., to the Alliance Machine Co., Alliance, Ohio.

Durant Motors Co., Elizabeth, N. J., in the market for two 15-ton locomotive cranes, one for Flint, the other for Lansing, Mich., has purchased the crane for Flint from the Industrial Works.

I. M. Ludington Sons, Rochester, N. Y., a 25-ton locomotive crane from the Brown Hoisting Machinery Co.

station. Remington & Vosbury, 601 Market Street, Camden, N. J., are engineers. Allen Clymer is borough clerk.

The Board of Education, City Hall, Newark, Alfred H. Krick, assistant secretary, will receive bids until Aug. 8 for power transmission machinery, woodworking vises, work benches, condensation pumps and miscellaneous equipment, as per specifications on file.

The Western Electric Co., 195 Broadway, New York, has leased the three-story factory at 708-20 Frelinghuysen Avenue, Newark, totaling 10,000 sq. ft., for the establishment of a new plant. It will be occupied early in the fall, giving employment to about 500. The plant will be operated separately from the new works to be erected on the Kearny meadows, near Newark, for which excavations are under way.

The Bertolette Machine Tool Co., 357 West Side Avenue, Jersey City, N. J., is in the market for 16-ft. plate bending rolls, punches and shear presses and pipe machines.

New England

BOSTON, July 30.

JULY unquestionably was the leanest month experienced this year by some machine tool dealers and representatives in this territory. This is generally ascribed to the vacation period, during which buyers are inclined to postpone purchases, and also to the leanness of new business booked by users of machine tools, which has developed acutely in the past fortnight. The rank and file of machine shops and manufacturers apparently are existing on week to week business and conserving cash resources rather than spend money for needed equipment under negotiation. There are, however, industries assured of good business well into 1924 if they do not secure another order, and it is largely to these that the machine tool trade looks for business next month and later.

Aside from the purchase by the Walworth Mfg. Co., South Boston, of a 5-ton electric crane for its Chicago pipe shop, and a grinding machine costing well up into four figures by the Putnam Machine Works, Fitchburg, Mass., individual sales the past week were small. A Worcester steel mill has indefinitely postponed its crane requirements.

A permit has been granted the Simonds File Co., Fitchburg, Mass., to build a one-story, 28 x 60-ft. addition to its plant on Falulah Road.

The Boston Elevated Railway Co., Massachusetts Avenue, Boston, is considering bids submitted last week for a coal handling system to be installed at its new machine shops, Everett, Mass.

The Cooley-Wright Mfg. Co., Waterbury, Vt., stone machinery, has purchased the plant and equipment of the Wiggins Machine & Mfg. Co., Burke, Vt. The business will be moved to Waterbury as soon as an addition to the plant can be completed.

The Romer Motors Corporation, Taunton, Mass. has purchased the plant of the Nelson Machine Co., where it proposes to carry on the manufacture of automobiles. The sale price was \$10,500, subject to a mortgage of \$50,000, four years' taxes, and receivers' certificates.

The American Pin Co., Waterbury, Conn., has awarded contract to the Immick Co., Meriden, Conn., for a one-story addition to Building No. 1, 40 x 120 ft., and a one-story foundry extension, 25 x 35 ft.

Fire, July 19, destroyed the plant of the Merrill Mill Co., Patten, Me., manufacturer of spool bars, etc., including steam-operated electric light and power plant, adjoining, with loss estimated at \$80,000.

A machine shop will be installed in the three-story service building to be erected by Smith & McCarthy, Pittsfield,

Mass., operating the local Ford automobile agency, estimated to cost \$45,000. G. F. Haynes, 184 North Street, is architect.

Herbert Swanson, care of James H. MacNaughton, 177 State Street, Boston, architect, has broken ground for a one-story machine shop on Beacon Street, Waban, Mass.

The New England Power Co., 50 Congress Street, Boston, has applied for permission to issue bonds for \$2,800,000, and preferred stock for \$2,700,000, a portion of the proceeds to be used for additions in generating plants and system, including the power development at Davis Bridge.

A manual training department will be installed in the two-story and basement high school to be erected at Gardner, Mass., estimated to cost \$175,000. The Board of Education is in charge.

The Narragansett Electric Light Co., Providence, R. I., has plans for a new four-story power house on Elm Street, to cost approximately \$100,000.

The Colburn Gear & Mfg. Co., 98 Holmes Street, Quincy, Mass., will build a new one-story machine shop.

Work is under way on the addition at the plant of the Boston Gear Works, Norfolk Downs, Boston, to be two-stories, 85 x 100 ft., estimated to cost \$50,000.

A one-story power house will be erected by the East Braintree Bleacheries, Inc., Adams Street, East Braintree, Mass.

Philadelphia

PHILADELPHIA, July 30.

A TRACT of seventy acres, between Sixty-third and Sixty-ninth Streets and Gibson and Eastwick Avenues, Philadelphia, has been acquired by the Ford Motor Co., Highland Park, Mich., for \$426,000. It will be used as a site for a large assembling plant to cost \$1,000,000, and for which plans will be drawn at once. A power house will be included. The company is now operating an assembling plant at Broad Street and Lehigh Avenue, and this will be removed to the new location. William Wallace is assistant manager at the Philadelphia works.

Fire, July, 22, destroyed a portion of the three-story millwork plant of Frank A. Cruice, Twenty-first and Ridge Streets, Philadelphia, including machinery and other equipment, with loss estimated at \$50,000. It is planned to rebuild.

The Apex Machine Co., 2801 West Susquehanna Street, Philadelphia, has awarded contract to the J. S. Rogers Co., Drexel Building, for a one-story machine shop at Stenton and Wyoming Streets, estimated to cost \$35,000.

C. M. Roswell, 1162 Marllyn Road, Philadelphia, machinery dealer, has inquiries out for a 5000-kw. turbo-generator, 2300 volts, three phase, 60 cycle, 150 to 175 lb. steam pressure, with surface condenser and auxiliary equipment.

Fire, July 21, destroyed a portion of the plant and machinery of the Savannah Chemical Co., Thirty-seventh and Dickinson Streets, Philadelphia, manufacturer of fertilizer products, etc., with loss approximating \$100,000. It is planned to rebuild.

The Budd Wheel Co., Twenty-third and Westmoreland Streets, Philadelphia, manufacturer of steel disk wheels for automobiles, has awarded contract to the Wark Co., Drexel Building, for a one-story addition.

The Philadelphia Commercial Museum, Thirty-fourth Street, has received an inquiry from a company at Mayaguez, Porto Rico, for quotations on American pipe drilling and threading machinery; from a concern at Santiago, Cuba, in the market for ice-manufacturing machinery; from a company at Melbourne, Australia, desirous of getting in touch with American manufacturers of clamps and kindred mechanical products; from a concern at Amsterdam, Netherlands, wishing to get in contact with American manufacturers of steel tools, scales and scientific instruments; from a concern at La Paz, Bolivia, in the market for agricultural tractors and machinery; and from a company at Toluca, Mexico, asking for quotations on American floor-planing machinery.

The Board of Education, Atlantic City, N. J., has plans nearing completion for a three-story addition to the industrial school, 42 x 125 ft., at Indiana and Baltic Avenues, and will soon call for bids on a general contract. Bertram Ireland, Guarantee Trust Building, is architect.

The Trenton & Mercer County Traction Co., Trenton, N. J., has tentative plans for the construction of a new car repair shop and material yard on site to be selected. It is also purposed to build an extension to the power plant and install additional machinery. The expansion program will cost more than \$500,000. Rankin Johnson is president.

The Pennsylvania Wire Glass Co., Pennsylvania Building, Philadelphia, will soon award a general contract for a

new plant at Lewistown, Pa., to cost more than \$200,000 with machinery. A power house will also be built. The plant will specialize in the production of plain and corrugated wire glass. The company is now operating works at Dunbar, Pa.

A manual training department will be installed in the new two-story and basement high school to be erected at Midland, Pa., estimated to cost \$175,000. W. G. Eckles, Lawrence Savings & Trust Building, New Castle, Pa., is architect.

Electrically-operated pumping machinery will be installed in the new sewerage disposal plant to be constructed by the City Council, Lancaster, Pa., estimated to cost \$1,000,000. The municipality has been ordered by the State Board of Health to make the improvement before the close of the year.

The Collins Engineering Co., Conshohocken, Pa., is being reorganized with an active capital of \$100,000, and plans for extensions. William S. Campbell, cashier of the People's National Bank, West Conshohocken, is treasurer.

The Consolidated Motors Co., New Castle, Pa., care of the local Board of Trade, has tentative plans for a new one-story plant, primarily for assembling, estimated to cost \$60,000 with machinery. W. O. Dayton is vice-president.

Harold M. Fredericks, Lock Haven, Pa., operating an electrical equipment and repair plant, including armature winding, etc., has plans for a new factory for increase in production. Considerable additional equipment will be installed.

The Pennsylvania Power & Light Co., Allentown, Pa., is arranging an expansion program to cost about \$8,000,000 during the next 24 months. The work will include the construction of a new hydroelectric generating plant on Wallenpaupack Creek, near Hawley, Pa.; a number of small generating plants and power substations; steel tower transmission lines and the installation of additional equipment at existing plants. The company is operated by the Electric Bond & Share Co., 71 Broadway, New York.

Manual training equipment will be installed in the new two-story and basement high school to be erected at Flourtown, Pa., estimated to cost \$200,000, for which bids are being called on a general contract. Ritter & Shay, North American Building, Philadelphia, are architects.

The Superior Metal Co., Bethlehem, Pa., has been chartered under State laws with a capital of \$40,000 to operate a plant, now in course of erection, for the production of metal products. The initial works will cost approximately \$25,000. Henry M. Kelly, Ottawa, Ill., is treasurer of the company.

C. Schubert and R. Van Horn, Philadelphia, care of James Collins Jones, representative, Bullitt Building, are forming electric power and transmission companies, for which charters will be taken out on Aug. 13. The companies will be known as the West Township, Decatur Township, West St. Clair Township, Frank Township, Uni Township and Lincoln Township Power companies, and will install plants and systems in the respective districts.

The National Roofing Co., Cly, Pa., has been reorganized with John F. Young as president, succeeding C. C. Eastlack. Work will proceed on rebuilding the plant recently partially destroyed by fire, and other extensions and improvements are planned.

Manual training equipment will be installed in the two-story high school to be erected at Mays Landing, N. J., estimated to cost \$285,000, for which bids will soon be asked on a general contract. J. H. Vaughn, Guarantee Trust Building, Atlantic City, N. J., is architect.

The Electric Light & Power Co., Hightstown, N. J., is planning for installation of a power house and system in a portion of Washington Township.

Baltimore

BALTIMORE, JULY 30.

CONTRACT for the construction of a \$250,000 plant at Eastern Avenue and Twenty-third Street, Baltimore, for the Porcelain Enamel & Mfg. Co., has been awarded to the P. C. Street Engineering Co., 406 St. Paul Street, Baltimore. It will be one and two stories and cover an area of 100 x 510 ft. It will replace the plant at Eighth and O'Donnell Streets, destroyed by fire last October.

The Baltimore & Ohio Railroad Co., Baltimore, has appropriated about \$115,000 for the installation of additional equipment at its tie-treating and timber-preserving plant at Green Spring, Md., to include generator, boiler and auxiliary equipment, air compressors, treating cylinders, tanks, etc. It is expected to increase the capacity 50 per cent.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for the following equipment: One 150 hp.

boiler, with auxiliary equipment and stack; 18 x 20 in. cast iron reducers, with 18 in. bell; one 1-ton electric hoist; one 15 to 25 kw. engine-generator set; one 100-hp. slide valve engine; 12 cypress tanks, 10 ft. in diameter and 6 ft. high, and six cypress tanks, 12½ ft. in diameter and 7 ft. high, equipped with agitators; one belt-driven air compressor, 300 cu. ft. per min. capacity; one 750-gal. per min. centrifugal pump, water-wheel operated, and one 1000-gal. per min. centrifugal pump, electrically-operated; three transformers, 500 kva. each; gate valves, pipe and fittings.

W. D. Jones, 207 East Jackson Street, Richmond, Va., operating a machine repair works, is planning the installation of a lathe, electric drill and other equipment.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Aug. 21 for 44 chain hoists for installation at the Norfolk and Mare Island Navy Yards, schedule 1145; until Aug. 14 for three motors, controllers and spare parts for the Portsmouth, Va., Navy Yard, schedule 1137; until Aug. 21, for 2 condensate pumps for the Puget Sound Navy Yard, schedule 1147; and motor-generator sets and transformers for the same yard, schedule 1142.

The North State Power Co., Raleigh, N. C., has tentative plans for a new electric power plant in Wake County. Alan Turner is president.

The Shamrock Propellers Co., Norfolk, Va., C. H. Boyles, general manager, is negotiating for the purchase of a site for a new plant estimated to cost \$200,000 with machinery. The main building will be used as a foundry.

The Southland Hardwood Lumber Co., Waynesville, N. C., recently organized with a capital of \$500,000, is planning for the construction of a power house in connection with a proposed lumber mill, to cost \$100,000 with machinery. A. H. Creelman, Waynesville, is head.

The Hackley-Morrison Co., Inc., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a 100 hp. boiler, Scotch type, with auxiliary equipment.

Seay & Askew, 1829 West Main Street, Richmond, Va., operating a machine repair shop, are planning the installation of a lathe, drill press and other equipment.

The Chatham County Commissioners, Savannah, Ga., will take bids until Sept. 20 for one dredge, with oil-burning equipment, including one 457 hp. internal combustion engine, and one 1 cu. yd. bucket.

The Tractor & Machinery Sales Corporation, Richmond, Va., recently organized with a capital of \$1,000,000, has tentative plans for new works for parts manufacture and assembling of farm tractors, with department for the manufacture of other agricultural equipment. It is estimated to cost \$150,000. J. H. Tucker is president.

G. A. Guignard and T. C. Williams, Columbia, S. C., are organizing a company to build a hydroelectric power plant on the Salude River, near Columbia. It is also proposed to erect a similar station on the Sante-Cooper Canal, Berkeley County. The plants will have a combined capacity in excess of 200,000 hp., and will cost more than \$750,000 with transmission system. The local chamber of commerce is interested.

The Southern Wholesale Lumber Co., Columbia, S. C., plans to rebuild its mill and power house destroyed by fire July 22, with loss approximating \$35,000.

James J. McDonald and Arthur P. Hoffa, Frostburg, Md., operating coal properties, plan the installation of electric power and mechanical equipment at their Caledonia mines, near Frostburg and at Phoenix, Md. Work is under way on a new coal tippie.

R. P. Johnson, Wytheville, Va., machinery dealer, has inquiries out for one 10- to 12-ton saddle tank locomotive, 36-in. gage, second-hand.

A. H. Davison, Athens, Ga., has inquiries out for a gasoline engine, hydraulic ram, log chains, and other equipment.

The Ninety-Six Lumber Co., Ninety-Six, S. C., is considering plans for rebuilding the portion of its lumber mill and power house destroyed by fire July 23 with loss estimated at \$100,000, including equipment. J. H. Walker heads the company.

Manual training equipment will be installed in the new high school to be erected at Walterboro, S. C., estimated to cost about \$85,000, for which bids will soon be asked. James B. Urquhart, Columbia, S. C., is architect.

The Carolina Pole Co., Selma, N. C., will build a power house in connection with its proposed pole-treating plant, estimated to cost \$100,000. It is also planned to equip a machine shop. I. H. Powell is president.

The J. G. Skelton Co., Inc., Richmond, Va., machinery dealer, has inquiries out for a 20-ton, double drum, locomotive crane, eight wheels, with about 40-ft. boom.

Stevens Brothers & Co., Atlanta, Ga., manufacturers of clay products, are in the market for a 30- to 40-ton locomotive, saddle tank.

The Eastwick Engineering Co., 342 Madison Avenue, New York, has received contract for the erection of the sugar mill at Norfolk, Va., for the Norfolk Sugar Refining Co., Inc., and will handle all details. The first unit will have a capacity of 500 tons per day and will cost \$3,600,000, including power house and other buildings. J. B. Morgan and H. B. Calwell, both of Norfolk, head the company.

The Midway Foundry Co., Burlington, N. C., is arranging plans for rebuilding the portion of its plant recently destroyed by fire with loss approximating \$60,000, including equipment.

The Consolidated Gas, Electric Light & Power Co., Baltimore, is inquiring for second-hand B & S gas or water pipe, one mile of 4-in. and three miles of 6-in. Address care of the purchasing agent.

The Frederick Iron & Steel Co., Frederick, Md., is in the market for 8000 square nut machine bolts with 1¼-in. thread, ¾ x 2¼-in. square head.

Pittsburgh

PITTSBURGH, July 30.

MACHINE tool business in this district still is uniformly dull. The trade has the Pennsylvania Railroad list for its local shops to work on, and the Baltimore & Ohio list for its Glenwood, Pittsburgh, shop also will be quoted against by the local trade. Outside of these lists there is very little business that promises to be closed at an early date. The Railway Steel Spring Co., which is erecting a large shop at Latrobe, Pa., plans to transfer all of the usable equipment from its Pittsburgh plant to the new works, and does not expect to purchase many new tools. Samuel Diescher Sons, Farmers Bank Building, Pittsburgh, are the engineers for the new plant of the Standard Sanitary Mfg. Co. in Baltimore, and probably soon will begin awards for the equipment. The market also has ruled very quiet on cranes and other heavy equipment.

Generally, the machine tool and equipment trade is inclined to take a hopeful view of the future, chiefly on account of the definite development of a movement toward the elimination of the 12-hr. day in the steel industry. This effort means the employment of more men than at present, and since the possibility of fresh recruits through immigration is slight, it is believed that only through a reduction in the number of men required for given work will it be possible to provide enough men to establish the shorter working periods. This, it is argued, will be attainable only through the installation of a great deal of labor-saving machinery.

Bids will be received by the City Water Board, Wellsburg, W. Va., until Aug. 15, for two 2,000,000-gal. motor-driven centrifugal pumps, one to be low-lift type and the other high-lift, with auxiliary machinery, for the municipal waterworks. Hudson & Myron, 808 Wabash Building, Pittsburgh, are engineers. J. F. Thompson is secretary of the board.

The Pittsburgh Steel Products Co., Union Arcade, Pittsburgh, has awarded a contract to the Austin Co. for a one-story addition at its Allenport, Pa., works, 120 x 620 ft.

The Venango Public Service Corporation, Franklin, Pa., will take over and merge 23 electric light and power utilities now operating in different portions of Venango County. Extensions will be made in a number of power plants and additional equipment installed.

A one-story machine shop will be installed in the three-story service building, 90 x 120 ft., to be erected by Decker Brothers, North Spring Street, Bellefonte, Pa., local agents for the Chevrolet automobile, estimated to cost \$80,000.

The Dunbar Flint Glass Corporation, Dunbar, W. Va., recently formed with a capital of \$125,000, will arrange a list of equipment to be installed in its new plant, including link belt and conveyor system, transmission equipment, etc. Two main buildings will be erected, 50 x 120 ft. and 40 x 120 ft., respectively. J. M. Payne, Jr., is president.

The Borough Council, Ford City, Pa., will receive bids until Aug. 6 for electrical equipment for municipal service, including one motor-generator set, 40 hp., with 25-kw. generator; one 4-cylinder gas engine, direct-connected to a 250-kva. electric generator, engine type and generator resistance,

and one switchboard panel and instruments, with auxiliary equipment. The city clerk is in charge.

Power equipment, conveying and other machinery will be installed in the six-story and basement printing plant to be erected at Seventh Street and the Bigelow Boulevard, Pittsburgh, by the Press Publishing Co., 228 Oliver Avenue, estimated to cost \$700,000. Hunting & Davis, Century Building, are engineers.

The Lathwood Foundry Co., Wayne and Thirtieth Streets, Pittsburgh, Pa., will soon take bids for a three-story and basement addition, 103 x 195 ft., estimated to cost about \$40,000. C. H. Dunnells, 135 Riverview Avenue, is engineer.

The State Board of Control, Charleston, W. Va., will receive bids until Sept. 29 on a general contract for a three-story industrial school for boys at Pruntytown, near Grafton, W. Va., 70 x 150 ft. R. A. Gillis, Fairmont, W. Va., is architect.

The Citizens' Light & Power Co., Oil City, Pa., is perfecting plans for a new power house on North Seneca Street, estimated to cost \$50,000.

Manual training equipment will be installed in the new high school to be erected in the Stealey Heights section, Clarksburg, W. Va., estimated to cost \$125,000, for which the Board of Education will authorize plans at an early date.

The Common Council, Salem, W. Va., plans the installation of electrically operated pumping machinery in connection with a new waterworks system to cost \$130,000.

Cleveland

CLEVELAND, July 30.

THE Pebbles Engineering Co., Newton Falls, Ohio, is placing a round lot of equipment for its new plant to manufacture small truck cranes and for car repair work. The bulk of this business has been placed with a Cleveland dealer. In the automotive field the Hudson Motor Car Co., Detroit, has commenced to place orders for considerable equipment for the enlargement of its Essex plant. No general list has been issued, but the company is reported to be taking up the purchase of various types of machines separately. It is now buying large special machines and later is expected to place orders for the smaller machines in standard types.

The Cleveland Board of Education has issued a list of 16 machines and considerable small miscellaneous equipment for the woodworking, sheet metal and electrical departments of the West Technical High School, for which bids will be received Aug. 3. With these exceptions the market is dull. Buying is confined almost wholly to single machines to round out present equipment and business is below normal for this season of the year. Compared with June, the aggregate sales for July will show a marked decrease.

The list issued by the West Technical High School, Cleveland, includes the following machines, all motor driven:

- One 10-in. sensitive drilling machine
- Two 2-wheel grinders
- One 13 in. x 5 ft. quick change gear lathe
- One combination punch and shear, No. 2 Niagara or equivalent
- One 24-in. hand forge
- One bench saw
- One 12-in. hand jointer
- One saw bench
- Two 30-in. band saws
- One 15-in. disk sander
- One oil stone tool grinder
- One 12-in. swing woodworking lathe
- One 8-in. belt sander
- One 5 x 12½-in. trimmer

The Globe Brass Mfg. Co., 5532 Perkins Avenue, Cleveland, will shortly commence the erection of a new plant on East Fifty-fifth Street to manufacture plumbers' brass goods. It will include a machine shop and foundry.

The Louisville Sheet Steel Co., Canton, Ohio, has been purchased by the Hydro-Forge Co., Alliance, Ohio, for \$70,000. The latter company, which was recently organized, plans to install new machinery and begin operation early next year. The Louisville plant became involved in financial difficulties about eighteen months ago and was shut down.

The Radiant Electric Co., Massillon, Ohio, has been incorporated with a capital stock of \$25,000 to manufacture electric heating appliances, including electric stoves. The officers are C. W. Stewart, president; Frank Held, vice-president; R. G. Harsch, secretary, and T. W. Thomas, treasurer and general manager.

The Massillon Aluminum Co., Massillon, Ohio, manufac-

turer of aluminum ware, has commenced the erection of an addition, which will add 20,000 sq. ft. to its present floor space and triple the company's output.

The National Lubricant Container Co., Cleveland, has acquired the plant of the Meech Foundry Co. on Meech Avenue.

The Wayman Electric & Mfg. Co., East Palestine, Ohio, expects to erect a new factory building under the direction of a local contractor. It is in the market for punch presses, small sensitive drills and tapping machines.

Chicago

CHICAGO, July 30.

THE Chicago machinery market is extremely quiet. Buying of machine tools by industrial plants amounts to so little in the aggregate that July will be the poorest month of the year so far. In railroad shop equipment a few orders are being placed, but two or three companies are getting most of the orders. The Santa Fe and the Union Pacific have placed a few more orders and now have practically bought all of the machines for which they recently inquired. The Illinois Central is expected to place orders for a few tools this week. There is no important business on the horizon, and the general expectation is that quiet conditions will last through August and possibly into September.

The Mulvey Iron Works, Percy E. Barry, president, 1340 Carroll Avenue, Chicago, contemplates the erection soon of a two-story factory, 103 x 406 ft., of brick and steel construction, on Fulton Street, near California Avenue.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, has awarded contract to the John W. Snyder Co., 116 South Michigan Avenue, for a two-story concrete steel machine shop, 90 x 200 ft., on West Twenty-second Street, at Fisk Street.

The Atlas Drop Forge Co., Lansing, Mich., has announced that it will erect new buildings which, with equipment, most of which has been ordered, will cost about \$300,000. J. P. Hopkins is general manager.

The Frank Foundry Co., Davenport, Iowa, has taken out a permit to build an addition to its plant to cost \$10,000.

The Werra Aluminum Foundry Co., South Bend, Ind., is contemplating the construction of an addition. It is a branch of the Werra Aluminum Foundry Co., Waukesha, Wis., and manufactures aluminum parts for automobiles, stoves, etc.

The Wilson Foundry & Machine Co., Pontiac, Mich., has started work on additions to its plant to cost \$1,500,000. This will about double the capacity of the plant and will give a total output of about 1700 automobile motors daily for the Willys-Overland Co., Toledo, Ohio.

The Peninsular Power Co., Iron River, Mich., will build a new power station, 44 x 60 ft., adjoining its present plant, to cost about \$250,000.

The Wayne Tank & Pump Co., Fort Wayne, Ind., contemplates the construction of a new factory and contracts will probably be let within the next few weeks. The new building is to take care of increased demand for the company's water softening equipment.

The Tokheim Pump & Tank Co., Fort Wayne, Ind., has awarded contracts for three new buildings to cost approximately \$80,000. One building will be a tank shop, 100 x 200 ft. This company has recently completed an addition to its machine shop, and machinery is now being installed.

The Hansell-Elcock Co., whose steel fabricating plant is at Archer and Normal Avenues, Chicago, has leased for a long period 11½ acres with building at California Avenue and Thirty-first Street. The structure has approximately 30,000 sq. ft. of floor space and was acquired to provide for future expansion.

The Chicago Steel & Wire Co. has awarded contract for a power plant, 45 x 48 ft., at East 103d Street and Torrence Avenue, Chicago. It will cost about \$50,000 and an additional \$50,000 will be expended for equipment.

The Universal Implement Mfg. Co., recently organized, is seeking a location for the manufacture of a new type of farm tractor which will cultivate as well as perform the other universal tractor duties. The company, whose temporary address is Post Office Box 113, Oak Park, Ill., is in the market to purchase or lease a fully equipped plant which can be adapted for an initial output of 10 tractors a day. J. W. Wilson, president, has been for many years engaged in motor truck and motor car production. He was formerly general superintendent and technical supervisor for the Republic Motor Truck Co., Alma, Mich.; factory manager of the Interstate automobile plant at Muncie, Ind.; general superintendent of the Elmore Mfg. Co., Clyde, Ohio, a former subsidiary of the General Motors Corporation, and also spent

two and a half years in the Ford Motor Co. plant at Detroit in a technical advisory capacity. J. G. Kerst, Springfield, Ill., inventor of the tractor, is vice-president and treasurer of the company.

Manual training equipment will be installed in the new four-story high school addition, 145 x 145 ft., to be erected on Eastman Avenue, Joliet, Ill., estimated to cost \$500,000, for which bids are being taken on a general contract. D. H. Burnham & Co., 105 West Monroe Street, Chicago, are architects.

The Common Council, Villisca, Iowa, is considering plans for the installation of a municipal electric light and power plant, estimated to cost \$75,000. H. J. Swanson, mayor, is in charge.

A manual training department will be installed in the new high school to be erected at Atkinson, Neb., estimated to cost \$150,000, for which bids will be received on a general contract until Aug. 21. Colby & Westerlind, Grain Exchange Building, Sioux City, Iowa, are architects.

The Modern Machine Shop, Danville, Ill., is considering plans for a two-story and basement addition, 75 x 150 ft. C. F. Carter is head.

The Municipal Utilities Commission, Watertown, S. D., will receive bids until Aug. 29 for pumping machinery, filter equipment, etc., for installation at the municipal water works. W. F. Cochrane is city engineer. A. M. Myhre is secretary.

A manual training department will be installed in the two-story high school to be erected at Fairbury, Neb., estimated to cost \$200,000, for which bids will be received on a general contract until Aug. 6. Fiske & Meginnis, 553 Bankers' Life Building, Lincoln, Neb., are architects.

Plans have been authorized by the First National Bank, Fifth Street and Marquette Avenue, Minneapolis, Minn., C. T. Jaffrey, president, for extensions in its power plant on Marquette Avenue, to cost \$35,000. Additional equipment will be installed. G. M. Orr, 516 Andrus Building, is mechanical engineer.

The California Ice Co., Antioch, Ill., has tentative plans for rebuilding the portion of its plant destroyed by fire July 20 with loss estimated at \$70,000.

Manual training equipment will be installed in the new two-story high school to be erected at Waseca, Minn., estimated to cost \$350,000, for which bids will be called on a general contract in August. W. B. Ittner, Board of Education Building, St. Louis, is architect.

The American Short Line Railroad Association, 1832 McCormick Building, Chicago, is inquiring for three General Electric gas-electric railroad motor cars and two wheel presses of 200 to 300 tons capacity, all used equipment. J. W. Cain is manager of purchases.

Buffalo

BUFFALO, July 30.

THE Northern Oil & Fuel Corporation, Coffeen Street, Watertown, N. Y., will build a one-story machine shop at its oil storage and distributing plant at Cape Vincent, estimated to cost \$30,000. G. W. Lane is president.

Electric power and transmission machinery, conveying apparatus, etc., will be installed in the new plant, 400 x 450 ft., to be erected by the American Lithographic Co., 52 East Nineteenth Street, New York, at Buffalo, to cost \$100,000. Frank Hackford is manager of the Buffalo branch of the company.

The Rochester Body Co., Inc., Favor Street, Rochester, N. Y., will take bids early in August for a two-story addition, 60 x 225 ft., estimated to cost \$40,000. W. F. Hunt is one of the heads of the company.

Herman J. Otten, Buffalo, has made application for permission to equip a sheet-metal works in the one-story building, 58 x 98 ft., at 825-29 East Ferry Street.

The Greenfield Construction Co., Frewsburg, N. Y., is planning for the purchase of power equipment, including boilers and auxiliary apparatus.

A controlling interest in the New York Concrete Pipe Co., Warsaw, N. Y., has been secured by Chandler, Baker & Mallard, Inc., Earlville, Madison County, N. Y., manufacturer of similar products. The new owners purpose to extend the plant and install additional equipment. C. C. Chandler is president and C. O. Gallett, secretary and treasurer.

The Niagara Falls Power Co., Niagara Falls, N. Y., will install hydroelectric equipment for a total capacity of 210,000 kw. at its new power plant now in course of erection. Negotiations are under way with the Government for additional water supply for operation. Paul A. Schoellkopf is president.

The Quality Sand & Gravel Co., Springville, N. Y., plans the installation of equipment for digging, conveying, loading,

etc., on property to be operated on Waverly Street. Stephen Engle is president and James P. Healey, secretary and treasurer. The company was recently organized.

F. Jaekle, Fredericka Street, North Tonawanda, N. Y., is planning for the installation of transmission equipment, conveying machinery, lathe, planer and other equipment in a local building for a new woodworking plant.

Fire, July 22, destroyed the ice plant, with loading machinery and other apparatus, of Howland & Co., Athens, N. Y., with loss estimated at \$75,000. Plans for rebuilding are under consideration. The cooperage shop of the Athens Supply Co. on adjoining property was partially destroyed, the loss approximating \$15,000.

F. D. Wells, Savannah, N. Y., is planning to purchase a three-drum hoisting engine with 1½-yd. capacity clam-shell bucket. The installation of a stiff-leg derrick is also being considered.

H. W. Wolcott, 1461 Main Street, Buffalo, operating a battery manufacturing and repair plant, is planning the erection of an addition and will issue a list of equipment.

Milwaukee

MILWAUKEE, July 30.

RECOVERY from the sagging tendency in machine tool business noted in June is indicated by the volume of orders booked by local manufacturers in July. The month, however, is below the monthly average from January to May, yet it is ahead of July last year. General industrial activity appears to be increasing. Public and private utilities are furnishing a steady demand for generating equipment, steam and hydroelectric, pumping machinery, etc. Skilled foundry and machine shop labor remains scarce, but common labor is becoming more plentiful.

The Milwaukee Central Board of Purchases, City Hall, is asking bids until Aug. 3 for furnishing the complete coal and ash handling system for the new Riverside pumping station of the municipal waterworks plant. A bond of \$11,400 or check for \$5,700 is required with each tender. Joseph W. Nicholson is chief buyer.

The Schroeder Grinding & Machine Co., Fond du Lac, Wis., is moving its shop and plant from Second and Macy Streets to a larger building at 13 West Second Street. It is installing a new Heald cylinder grinder, a Norton crank-shaft grinder and other equipment.

The Green Bay Sugar Co., Green Bay, Wis., has plans for a two-story addition, 60 x 150 ft., to be equipped as a beet pulp drying and grinding plant; estimated to cost about \$125,000. Charles H. Hine is general manager.

The Bronze Seal Piston Ring Co., Green Bay, Wis., has been incorporated with \$20,000 capital and leased the building at 1800 Broadway, which will be equipped as a machine shop for manufacturing patented piston rings. The incorporators are T. W. Pritchard and George E. Prickett of Oshkosh, Wis., and C. W. Wright, 427 South Monroe Avenue, Green Bay.

The city of Milwaukee is asking bids until Aug. 3 for furnishing two 200-gal.-per-min. sump pumps for the new Riverside pumping station.

The Racine Deflector Co. has been organized at Racine, Wis., by Michael Hammes and L. J. Borman to manufacture a patented device for automobile headlights. Additional equipment will be purchased to supplement that of a small experimental shop conducted for the past year.

The city of Oshkosh, Wis., is considering plans by Byron T. Gifford, consulting engineer, for a new electrical pumping station unit for the municipal waterworks system. The equipment will consist of five electrically driven and automatically controlled centrifugal pumps, three of 2500-gal.-per-min. and two of 1250-gal.-per-min. capacity. Bids for the equipment are expected to be taken shortly. A. C. McHenry is manager of the water department.

The Lederman System, Inc., Green Bay, Wis., is installing considerable machinery, including automatic screw machines, pressing and stamping equipment, in a part of the factory of the Oneida Motor Truck Co., and expects to start quantity production Aug. 6 of a sheet metal filing case with automatic selection features. Most of the equipment requirements have been filled.

The Board of Education, Neenah, Wis., has selected a site and engaged John D. Chubb, architect, 109 North Dearborn Street, Chicago, to design a new three-story high school and vocational institute, 224 x 365 ft., estimated to cost \$500,000. Bids will be taken late in August by George W. Burnside, secretary, 145 West Wisconsin Avenue, Neenah.

The North East Power Co., subsidiary of Wisconsin Public Service Corporation, 559 Marshall Street, Milwaukee, has placed contract with the Allis-Chalmers Mfg. Co., Milwaukee, for two 4650-hp. vertical turbo-generator units for the new hydroelectric plant at Caldron Falls, Wis., estimated to cost \$750,000. J. R. McDonald, Black River Falls, Wis., has the general contract for the construction of reinforced concrete dam and power house. Inquiry is being made for six 14 x 16-ft. steel tainter gates, two steel penstocks, two traveling gate hoists, four transformers, switchboards, etc. Mead & Seastone, Madison, Wis., are consulting engineers in charge.

The Universal Clothes Presser Mfg. Co., Milwaukee, has been incorporated with \$25,000 capital stock to manufacture special machinery. The incorporators are W. H. Dick, Jacob H. Weishan, H. A. Krause and James Fiskow. Temporary headquarters have been opened at 1104 American Avenue, pending selection of a factory and office.

Indiana

INDIANAPOLIS, July 30.

PLANS are nearing completion for a two-story and basement branch factory at Fort Wayne, Ind., by the Chalfant Can Co., 1966 South Meridian Avenue, Indianapolis, estimated to cost \$55,000. At present it is undecided whether to proceed with the work in the fall or to defer it until the coming year. Pohlmeier & Pohlmeier, Central Building, Fort Wayne, are architects. L. A. Corcoran is president.

C. A. Bradford, Indianapolis, will establish a new one-story machine shop at 570 North Belleview Place.

H. J. & W. M. Gelzer, Hillsdale, Mich., manufacturer of screens, screen doors, etc., have acquired the plant of the Auburn Mfg. Co., Auburn, Ind., devoted to a similar line of manufacture. The new owners will take immediate possession and plan the installation of considerable machinery and power equipment.

Electrically-operated pumping machinery and other equipment will be installed by the City Council, Evansville, Ind., in connection with the construction of a new filtration plant and extensions to the municipal waterworks, estimated to cost \$250,000.

The Hedderich Brothers Co., Evansville, Ind., is building a one-story addition to its brass foundry, 60 x 60 ft.

The Tucker & Dorsey Mfg. Co., State and Bates Streets, Indianapolis, will build a one-story addition to its power house.

Power equipment, elevating and conveying machinery and other equipment will be installed in the freight terminal to be erected by the Terminal Realty Co., Indianapolis, on Kentucky Avenue, comprising three buildings, estimated to cost \$900,000. The company is a subsidiary of the Terre Haute, Indianapolis & Eastern Traction Co., the Interstate Public Service Co., Indianapolis & Cincinnati Traction Co., and the Union Traction Co., and the terminal structures will be used by these roads jointly. Robert I. Todd of the first noted traction company is president.

Detroit

DETROIT, July 30.

BIDS will be received by the Board of Water Commissioners, Detroit, until Aug. 21, for one 37,000,000 gal., vertical, triple expansion, crank and flywheel type pumping engine, for installation at the municipal waterworks. Theodore A. Leisen is consulting engineer; H. S. Starkey is secretary.

The Jackson & Church Co., 321 North Hamilton Avenue, Saginaw, Mich., operating a steel fabricating plant, has tentative plans for an addition. John L. Jackson is head.

The plant and property of the Bowman-Gould Co., Detroit, manufacturer of wireless equipment, automotive specialties, etc., has been acquired by new interests. The company will be reorganized, it is stated, extensions and improvements made, and operations resumed.

The Board of Education, Detroit, has inquiries out for tools and other equipment for installation in manual training departments, including 18 lathes, 9 x 36 in.; one back-gear crank shaper, 14 to 16 in.; six single, back-gear engine lathes, 13 in x 4 ft.; two bench type arbor presses; two 20-in drill presses; one milling machine; one sensitive floor drill, and other tools. C. A. Gadd, 1354 Broadway, is business manager.

The Mason Motor Co., Fenton Road, Flint, Mich., has tentative plans for an addition. M. C. Day is secretary and treasurer.

The Triangle Truck Co., St. Johns, Mich., has been reorganized and has tentative plans for expansion to manufac-

ture a new line of motor trucks and equipment; Henry D. Minich, vice-president Republic Motor Truck Co., Alma, Mich., is president of the new company; B. F. Wright, formerly connected with the Republic company as chief engineer, is vice-president in charge of production.

Manual training equipment will be installed in the new senior and junior high school to be erected at Owosso, Mich., estimated to cost \$500,000, for which an architect will soon be selected. E. J. Willman, Board of Education, is in charge.

E. G. Davett, Marquette, Mich., operating a general machine repair works, is planning the installation of a drill press, air compressor, emery grinder and other equipment.

The Copper Coal Co., Saginaw, Mich., recently organized with a capital of \$500,000, is considering the installation of electric power and other equipment at its properties. Otto L. Dittmar is president.

The Consumers Power Co., Jackson, Mich., is planning the installation of a branch power house and system at Ithaca, Mich., where a franchise has just been granted.

The Common Council, Lansing, Mich., plans the installation of electrically-operated pumping machinery in connection with extensions in the municipal water system estimated to cost \$600,000. Otto Eckert, City Hall, is city engineer.

Cincinnati

CINCINNATI, July 30.

ALITTLE more activity in the local market was noted the past week, and better prospects for business are reported by many manufacturers. Some fair-sized deals were closed. The Pennsylvania Railroad continued to purchase miscellaneous tools for various shops, and the Chicago & North Western was also a buyer. The United States Shipping Board placed orders for five engine lathes, and the American Can Co. for five shapers. The Delco Light Co., Dayton, bought two multiple spindle drills. The list of the Montreal Harbor Commissioners has practically all been purchased, most of the orders going to Canadian manufacturers.

Automotive parts manufacturers have been fair buyers and one local manufacturer reports a good order for lathes from the Detroit district. A number of good inquiries have been issued. The Pennsylvania Railroad took bids July 25 on 14 engine lathes for its St. Louis shops, and the Big Four has issued a list of 10 tools for the Urbana shops. The Pollak Steel Co., Cincinnati, has taken bids on metal-working machinery, including punches and shears and presses.

A large manufacturer of grinders, which recently advanced prices, is reported to have booked numerous orders for grinding machines previous to the advance becoming effective.

The Universal Body Co., Columbus, Ohio, manufacturer of truck bodies for Ford cars, has purchased property adjoining its plant for expansion, and contemplates the erection of an addition this fall. H. B. Coen is president.

The Bauer-Stuart Co., Springfield, Ohio, has been incorporated with a capitalization of \$25,000. It will manufacture automobile shock absorbers, but has not yet announced the location of its plant. Louis E. Bauer and Harve R. Stuart are the chief incorporators.

The Vaco Washer Co., Sabina, Ohio, has been incorporated with a capitalization of \$10,000 to manufacture electric washing machines. The plant will be located in Sabina and production is expected to start some time in August. R. W. Allen is president.

The Elwood Myers Co., Springfield, Ohio, manufacturer of advertising novelties, has been placed in the hands of receivers, L. E. Bauer and Harlan C. West having been appointed. The plant will be continued in operation.

The Daniel Husker & Implement Co., Kenton, Ohio, has been organized to manufacture motor-driven husking machinery. F. J. Laubis is president. The plant, which is now in production, is located at Vine and Grove Streets.

The Standard Wheel Co., Terre Haute, Ind., has discontinued the manufacture of automobile and motor truck wheels, and hereafter the plant will be devoted entirely to the production of malleable iron castings. It is now operating two furnaces and contemplates extensions, although not in the immediate future. E. J. Fischer is president.

The Central South

ST. LOUIS, JULY 30.

TENTATIVE plans are being considered by the Congo Grease Machine Corporation, St. Louis, recently organized with a capital of \$50,000, for the establishment of a plant to manufacture grease machines and other motor accessories. H. A. Robert Fisher and A. M. McSpadden, St. Louis, head the company.

The Hilton-Collins Co., Inc., Louisville, operating a boiler and plate shop, is in the market for a 100-lb. hammer, Bradley type, punches, bull-dozers and other equipment.

The Kansas City Power & Light Co., 1330 Grand Avenue, Kansas City, Mo., has plans for a new one and two-story building, 160 x 180 ft., at Twenty-fifth Street and Penn Avenue, a portion of the structure to be used as a machine shop and service works for company cars and trucks. It will cost about \$125,000. A. E. Bettes is chief engineer.

The Anderson-Pritchard Oil Corporation, Oklahoma City, Okla., will build an addition to its refinery at Cyril, Okla., for gasoline production. It will cost \$100,000 including machinery.

The Arkansas Boys Industrial School, Pine Bluff, Ark., will break ground for a new one-story trade and industrial instruction building. Seig & McDaniel, Memphis, Tenn., are architects. W. B. Sorrells is chairman of the board of trustees.

The Industrial Refining Co., Wichita, Kan., has purchased the refinery of the St. Louis Oil & Refining Co., El Dorado, Kan. The new owner will make extensions and install new machinery.

Manual training equipment will be installed in the new high school to be erected at Warrensburg, Mo., estimated to cost \$200,000, for which bids are being received on a general contract until Aug. 8. J. B. Felt & Co., 800 Grand Avenue, Temple Building, Kansas City, Mo., are architects.

The Duncan Machinery Co., Dempster Building, Knoxville, Tenn., machinery dealer, is in the market for one 10 hp. single drum, gasoline hoisting engine, and one 150-hp. Scotch marine boiler and auxiliary equipment.

The Interstate Refineries, Inc., Twenty-second and Manchester Streets, Kansas City, Mo., will rebuild the portion of its refinery, recently destroyed by fire. The work will cost close to \$200,000, with machinery. E. J. Roifs is in charge.

Manual training equipment will be installed in the new junior high school to be erected at Linwood Boulevard and Montgall Avenue, Kansas City, Mo., estimated to cost \$900,000. Charles A. Smith, 602 Finance Building, is architect.

The City Council, Danville, Ky., is planning the installation of electrically-operated pumping machinery in connection with a new municipal water plant to cost about \$200,000. Peare, Greeley & Hansen, 38 West Adams Street, Chicago, are engineers.

The Union Electric Light & Power Co., St. Louis, has concluded arrangements for the purchase of the electric power properties of the Light & Development Co., operating in neighboring territory, for about \$9,000,000. The new owner plans extensions in a number of plants and the installation of additional equipment.

J. H. Cochran, 210 Keller Building, Louisville, is in the market for a second-hand 150-hp. motor, 500-550 volts, with rheostat, starter, etc.

The Michael Ferguson Hardware Co., Paducah, Ky., has plans for a new one-story factory, 115 x 150 ft., with power house, estimated to cost \$100,000 including equipment. D. Harry Jameson, Paducah, is architect.

H. J. Nicholas, head of the Nicholas Crusher Co., Thirty-third and Wyoming Streets, Kansas City, Mo., is planning the erection of new works to manufacture clay products, estimated to cost \$100,000 with power house and machinery.

The Silver Hill Concrete Products Co., Silver Hill, Mo., recently organized, has tentative plans for the establishment of a factory to manufacture concrete specialties. Leonard J. Mathers and John Campbell, Silver Hill, head the company.

The Bradbyer Dunntile Mfg. Co., 17 South Zuni Street, Tulsa, Okla., is arranging for the erection of a new plant, 100 x 100 ft., to manufacture building and roofing tile products, estimated to cost \$35,000. Equipment will include elevating and conveying machinery, power equipment, etc. L. J. Campbell is secretary.

The Central Oil & Gas Co., Liberty, Mo., is planning the construction of a new oil storage and distributing plant on local site. Similar works will also be erected at Henrietta, Mo. The equipment will cost \$80,000.

The Dixie Laboratories, Inc., 511 West McDaniel Street, Springfield, Mo., has acquired a site for a new one-story

plant for the manufacture of spraying equipment and devices for agricultural service. E. S. Carter is general manager.

The Water, Electric Light and Sewer Improvement District, Piggott, Ark., will receive bids until Aug. 7 for electric equipment for a new lighting plant, including one 125 hp. high compression internal combustion engine, direct-connected to a 100 kva. generator, with exciter; one 75 hp. engine, similar type, direct-connected to a 50 kva. generator, with exciter; one five-panel switchboard, transformers and miscellaneous equipment. Albert C. Moore, Joplin, Mo., is consulting engineer. William F. Linke is secretary.

The Elliott & Stephens Machinery Co., Chemical Building, St. Louis, is exclusive distributor in the southwestern territory for the Lodge & Shipley Machine Tool Co., covering its line of lathes.

The Gulf States

BIRMINGHAM, JULY 30.

PLANs are being perfected by the Gulberson Corporation, Pennsylvania Avenue, South Dallas, Tex., for an addition, comprising a foundry, machine shop and other buildings for the manufacture of its regular line of oil well equipment and tools. It is proposed to double the capacity. The expansion will cost close to \$450,000, including machinery.

The Kaufman Metal Co., Clark and First Streets, Jacksonville, Fla., is in the market for a metal furnace with capacity of about 300 lb., for melting brass, etc.

The Lockard Brick Works, Meridian, Miss., are arranging to rebuild the portion of the plant and power house, recently destroyed by fire with loss estimated at \$60,000. New brick molding machinery, mechanical drying equipment, etc., will be installed. M. M. Lockard is head.

The Robert Mugge Co., Tampa, Fla., has inquiries out for an 8000 lb. steam hammer, two 6 in. centrifugal pumps; one 20 to 30 hp. boiler, and auxiliary equipment.

Manual training equipment will be installed in the high school to be erected at Corsicana, Tex., estimated to cost \$125,000, for which bids are being received on a general contract until Aug. 7. William B. Ittner, Board of Education Building, St. Louis, is architect.

F. E. Brown and C. C. Holden, Bronte, Tex., have secured a franchise for local light and power service, and plan the erection of a new power plant and system. The initial installation will cost \$60,000.

The Union Power Co., Inc., Shreveport, La., recently organized, will build a power house and pumping station in connection with its proposed carbon black manufacturing plant at Monroe, La., estimated to cost \$1,000,000 with machinery. F. T. Whited, vice-president Frost-Johnson Lumber Co., Shreveport, is president of the Union Company. Frank J. Silsbee is vice-president and general manager.

The Community Mfg. Enterprise, Inc., is arranging for the installation of a crushing plant in a local building and will purchase equipment, including boilers and auxiliary power apparatus, trucks and trailers. G. P. Greig is secretary and treasurer.

A manual training department will be installed in the new high school to be erected at Vernon, Tex., for which bonds for \$110,000, have been approved. Guy A. Carlander, Amarillo, Tex., architect, has been selected to prepare plans.

An ice-manufacturing and precooling plant to cost about \$70,000 will be erected by the Florida Vegetable Corporation, Sanford, Fla.

The Elmer Tank & Boiler Works, Inc., New Orleans, has inquiries out for a set of bending rolls and bevel shears for handling ½-in. plates; also for one large and one small horizontal punch. C. C. Elmer is head.

A cold storage and refrigerating plant will be installed in the new meat-packing plant to be erected by the Jacob Decker & Son Sales Co., Mason City, Iowa, at Dallas, Tex. The structure will be 75 x 100 ft. and is estimated to cost \$60,000.

Bonds have been voted by citizens of Edgewood, Tex., for \$55,000, for the installation of a municipal electric light and power plant, in conjunction with a waterworks system.

The Union Water Co., Hartselle, Ala., is planning the installation of electrically-operated pumping machinery in connection with a new local waterworks. It is a subsidiary of the Alabama Water Co., Birmingham.

Manual training equipment will be installed in the new two-story high school to be erected at Eagle Lake, Tex., estimated to cost \$115,000, for which plans are being prepared by Gleescke & Harris, Austin, Tex., architects.

The Southwestern Graphite Co., Burnett, Tex., will establish a main grinding and refining plant at Lyons

Avenue and the Texas & New Orleans Railroad. It will cost approximately \$150,000 including machinery.

The Western Public Service Co., Sour Lake, Tex., will make additions to its electric power plant and install new equipment.

The Louisville & Nashville Railroad Co., Louisville, has tentative plans for enlargements in its locomotive shops at Albany, Ala., and the installation of additional equipment.

The Piedmont Lumber Co., Auburn, Ala., recently organized with a capital of \$100,000 to take over the plant and property in the Auburn section of the C. Y. Young Lumber Co., plans for extensions and additional machinery installation. Charles H. Haynes, Cliffside, N. C., is president.

The Texas Power & Light Co., Dallas, Tex., will build a number of high power substations for electric service in the new oilfields in the vicinity of Powell, Tex., with the construction of transmission lines and the installation of motors and other electric power machinery at the various properties. John W. Carpenter is vice-president and general manager.

The Industrial Cotton Oil Co., Waco, Tex., has been organized with a capital of \$150,000, to take over the local mill of the American Cotton Oil Co. The new owner plans extensions and the installation of additional equipment. W. D. Kyser, Marlin, Tex., is president, and J. M. Ford, Waco, vice-president and general manager.

The Sowden Engineering Co., San Antonio, Tex., recently organized, has acquired the plant of the Stroud Mfg. Co., for the manufacture of farm tractors, agricultural implements, etc. Equipment will be installed at an early date. F. G. Sowden is president.

The W. D. Wood Lumber Co., Birmingham, is in the market for five 10-ton, electrically-operated chain hoists, with three-phase, 60 cycle motors.

The Leahy Machine Shop, Rogers, Tex., has inquiries out for a 100-hp. oil-operated engine, with auxiliary equipment.

The People's Ice Co., Wichita Falls, Tex., is planning the installation of additional equipment to develop a maximum output of 100 tons per day.

The Laredo Electric & Railway Co., Laredo, Tex., has plans for the construction of a new steam-operated power house. John M. Marriott, San Antonio, Tex., is engineer.

The Invincible Oil Corporation, P. O. Box 1117, Shreveport, La., is inquiring for one or two 8 ft. x 30 ft. or 6 ft. x 40 ft. pressure still shells, either riveted or welded and with solid firesheet.

The Pacific Coast

SAN FRANCISCO, July 25.

THE Pacific Wheel & Rim Co., 417 North Broadway, Santa Ana, Cal., is planning the erection of a new factory to manufacture steel disk wheels and rims. A site has been acquired.

The San Diego Oil Products Co., San Diego, Cal., has purchased the by-products cottonseed oil works of the Good-year Tire & Rubber Co., Phoenix, Ariz., and will extend the property for a new branch plant. C. H. Bencini is president.

The Vitriified Products Co., San Diego, Cal., is planning the erection of a new unit estimated to cost \$50,000. George W. Kummer is general manager.

The Campbell Oil Co., Shelby, Mont., is perfecting plans for a new oil refinery, estimated to cost \$500,000 with machinery.

The Pacific Steel Corporation, Los Angeles, recently organized, has purchased 200 acres at Long Beach, Cal., as a site for a new plant to manufacture steel products, estimated to cost \$2,000,000 with equipment. D. M. Reynolds, First National Bank, is president.

The McGuire Cabinet Co., 1514 Hooper Avenue, Los Angeles, has awarded a contract to W. F. Gow, Bank of Italy Building, for a two-story addition to cost \$25,000. H. M. Banfield and Herbert A. Welch, 514 Bryson Building, are associated architects.

The Board of Supervisors, San Jose, Cal., will take bids until Aug. 6 for a new power plant at the County hospital, estimated to cost \$90,000. Binder & Curtis, 255½ South First Street, are architects.

The Baker-Hickman Sash & Door Co., 814 American Avenue, Long Beach, Cal., has tentative plans for two one-story buildings, each 80 x 120 ft., estimated to cost \$75,000.

The Clay Products Co., Fullerton, Cal., has acquired property on the Bastanchury ranch as a site for a new plant to manufacture tile and other products, estimated to cost \$90,000. A power house will be built. The company has established temporary offices in the California Hotel Building, Fullerton. George R. Whitcomb is head.

The Domestic Trade Bureau, San Francisco Chamber of Commerce, Merchants Exchange Building, is in receipt of an inquiry (D-653) from a concern in the Hawaiian Islands desiring to get in contact with manufacturers of sanitary can machinery.

The California Spring Co., Los Angeles, will take bids for a new one-story plant, 107 x 120 ft., estimated to cost \$23,000 exclusive of equipment. W. Douglas Lee, Sun Building, is architect.

Canada

TORONTO, July 30.

WHILE no large machine tool lists were issued during the week, small orders were on a parity with those of the past few weeks, which resulted in a good movement of tools. Sales for the first six months of this year show a decided improvement over those for the corresponding period last year, and the outlook is for strong demand for the remainder of the year.

Several inquiries are out for equipment for electrical development projects. The Canadian National Railways have been in the market with small lists, chiefly for replacement purposes. The Canadian Pacific Railway is interested in equipment for shops in western Canada and is purchasing an occasional machine for replacement in other shops.

The Mahaffy Iron Works, 4 Trafalgar Avenue, Toronto, is asking for prices on motors, machinery, tools, etc., for a new plant to be erected on Kendal Avenue, at a cost of \$50,000.

The Imperial Oil, Ltd., Sarnia, Ont., is in the market for oil tanks and pumping equipment to replace that destroyed by fire a short time ago. The new equipment will cost approximately \$60,000.

The City Council, Walkerton, Ont., plans to build a pump house, stand pipe and install gasoline operated pumps at a cost of about \$35,000.

It is reported that the T. Eaton Co., 190 Yonge Street, Toronto, has purchased the assets and plant of the Hercules Rubber Co., Brampton, Ont., and proposes to make additions and install equipment to double the capacity.

The Granby Consolidated Mining & Smelting Co., Vancouver, B. C., has started work on the erection of an ore mill and concentrator building at Granby, B. C., to cost \$600,000.

Industrial Items

The Universal Steel Co., alloy and tool steels, Bridgeville, Pa., sustained damage to its main merchant mill through fire on June 30, to the extent of \$15,000. The roof over a large area was destroyed and a small portion of the steel work was damaged. Aside from a few small motors and tools, the electrical equipment remains intact. Repairs are under way.

The Kerr Turbine Co., Wellsville, N. Y., has effected a reorganization through the acquisition of practically all its common stock by new interests. Paul B. Hanks, formerly president, having disposed of his holdings, has resigned and has been succeeded by W. T. Hamilton of Pittsburgh. Capital for expansion has been put into the business in sufficient amount to take care of all present and future requirements, enabling the company to take care of any volume of business that may be developed in the future.

The General Railway Signal Co. shows surplus of \$245,337, after expenses, interest, taxes, etc., in its report for the half-year ended June 30. George D. Morgan, vice-president, said that unfilled orders aggregate \$1,200,000.

Transue & Williams Steel Forging Co. reports net earnings \$279,048, for the six months ended June 30. This compares with a deficit of \$116,462 in that period of 1922. Balance sheet as of July 1 shows net working capital of \$2,427,000, against \$2,169,000 on Dec. 31, last. Current assets are now about \$2,727,000 and current liabilities around \$300,000. Quarterly dividend was recently increased from 50c to 75c. per share. Order books are well filled.

Roger J. Adams & Co., Inc., 320 Van Nuys Building Los Angeles, Cal., has under construction at Alhambra, Cal., a plant for the manufacture of concrete building blocks, which will be in operation about Aug. 1, with initial capacity of 2000 blocks per day. A large tract of land has been obtained and a warehouse 80 x 300 ft. will be built. The company contemplates erecting additional plants in southern California, after the Alhambra plant gets under way. Roger J. Adams is president.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:

Refined iron bars, base price.....	3.54c.
Swedish charcoal iron bars, base.....	7.50c.
Soft steel bars, base price.....	3.54c.
Hoops, base price.....	5.19c.
Bands, base price.....	4.39c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	3.64c.
Channels, angles and tees under 3 in.	
x ¼ in., base.....	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger).....	4.10c.
Toe-calk, ½ x ¾ in. and larger.....	4.60c.
Cold-rolled strip, soft and quarter hard.....	7.50c. to 8.50c.
Open-hearth, spring-steel.....	5.00c. to 7.50c.
Shafting and Screw Stock:	
Rounds.....	4.65c.
Squares, flats and hex.....	5.15c.
Standard tool steel, base price.....	15.00c.
Extra tool steel.....	18.00c.
Special tool steel.....	23.00c.
High speed steel, 18 per cent tungsten.....	75c. to 80c.

Tank Plates—Steel

¾ in. and heavier.....	3.64c.
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Sheets

Blue Annealed

	Per Lb.
No. 10.....	4.59c.
No. 12.....	4.64c.
No. 14.....	4.69c.
No. 16.....	4.79c.

Box Annealed—Black

	Soft Steel	Blued Stove
	C. R. One Pass	Pipe Sheet
	Per Lb.	Per Lb.
Nos. 18 to 20.....	4.45c. to 4.80c.	.....
Nos. 22 and 24.....	4.50c. to 4.85c.	5.10c.
No. 26.....	4.55c. to 4.90c.	5.15c.
No. 28.....	4.65c. to 5.00c.	5.25c.
No. 30.....	4.85c. to 5.20c.	.....

No. 28 and lighter, 36 in. wide, 10c. higher

Galvanized

	Per Lb.
No. 14.....	4.75c. to 5.10c.
No. 16.....	4.90c. to 5.25c.
Nos. 18 and 20.....	5.05c. to 5.40c.
Nos. 22 and 24.....	5.20c. to 5.45c.
No. 26.....	5.35c. to 5.70c.
No. 27.....	5.50c. to 5.85c.
No. 28.....	5.65c. to 6.00c.
No. 30.....	6.10c. to 6.50c.

No. 28 and lighter, 36 in. wide, 20c. higher

Welded Pipe

Standard Steel

	Black	Galv.
½ in. Butt... —41 —24		
¾ in. Butt... —46 —32		
1-3 in. Butt... —48 —34		
2½-6 in. Lap... —44 —30		
7-8 in. Lap... —41 —11		
9-12 in. Lap... —34 —6		

Wrought Iron

	Black	Galv.
½ in. Butt... —4 —19		
¾ in. Butt... —11 —9		
1-1½ in. Butt... —14 —6		
2 in. Lap... —5 —14		
2½-6 in. Lap... —9 —9		
7-12 in. Lap... —3 —16		

Steel Wire

	Per Lb.
Bright basic.....	5.00c.
Annealed soft.....	5.00c.
Galvanized annealed.....	5.65c.
Coppered basic.....	5.65c.
Tinned soft Bessemer.....	6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet.....	19¼c. to 20¼c.
High brass wire.....	20¼c. to 21¼c.
Brass rods.....	18 c. to 19 c.
Brass tube, brazed.....	27¼c. to 28¼c.
Brass tube, seamless.....	25½c. to 26½c.
Copper tube, seamless.....	27 c. to 28 c.

Copper Sheets

Sheet copper, hot rolled, 23¼c. to 24¼c. per lb. base.	
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	

Tin Plates

	Grade	Grade	Coke—14 x 20	Prime	Seconds
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
Bright Tin					
IC..	\$11.75	\$10.50	80 lb..	\$6.55	\$6.30
IX..	13.00	11.75	90 lb..	6.65	6.40
IXX..	14.75	13.00	100 lb..	6.75	6.50
IXXX..	16.50	14.75	IC..	7.00	6.75
IXXXX..	18.50	16.50	IX..	8.25	8.00
			IXX..	9.50	9.25
			IXXX..	10.75	10.50
			IXXXX..	12.00	10.75

Terne Plates

	8 lb. coating, 14 x 20
100 lb.	\$7.00 to \$8.00
IC.....	7.25 to 8.25
IX.....	8.25 to 8.75
Fire door stock.....	9.00 to 10.00

Tin

Straits pig.....	41c.
Bar.....	48c. to 53c.

Copper

Lake ingot.....	17½c.
Electrolytic.....	17 c.
Casting.....	16¾c.

Spelter and Sheet Zinc

Western spelter.....	7½c.
Sheet zinc, No. 9 base, casks.....	10¼c. open 10¼c.

Lead and Solder*

American pig lead.....	8c. to 8¼c.
Bar lead.....	11c. to 12c.
Solder, ½ and ½ guaranteed.....	29c.
No. 1 solder.....	27c.
Refined solder.....	23c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

Antimony

Asiatic.....	8c. to 8½c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	32c. to 33c.
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Old Metals

The market is quite dull and discouraged, with prices on copper and brass slightly off, while lead is a little higher.

	Cents
	Per Lb.
Copper, heavy crucible.....	12.25
Copper, heavy wire.....	11.50
Copper, light bottoms.....	10.00
Brass, heavy.....	6.50
Brass, light.....	5.25
Heavy machine composition.....	9.25
No. 1 yellow brass turnings.....	6.50
No. 1 red brass or composition turnings.....	8.00
Lead, heavy.....	5.00
Lead, tea.....	3.75
Zinc.....	4.00

